COMPUTERWORLD

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Slight Rise In DP Salary Levels Seen

By Michael Merritt
CW Staff Writer

PALO ALTO, Calif. – Salaries of programmers and other DP personnel have risen in the last year, according to the most recent survey by Source EDP, a national placement firm.

The Source conclusion differs from that of the Robert Half agencies, which saw a 2% to 10% drop in starting salaries [CW, April 14]. Source sees a slight rise in DP salary levels, generally 1% to 2%.

Speaking on the apparent discrepancy, Source President M.R. Parr told CW: "Employers are anxious to reduce costs at any time, and particularly during periods of economic downturn and resulting profit squeeze. We have certainly heard the lower ranges requested, but we have also observed, and participated in, the resulting hiring.

"The significance is not in the stated ranges but rather in the actual starting salary paid. In point of fact, most employers are still more interested in worth than in price," Parr said.

Examination of actual salaries of more than 8,000 computer professionals involved in the Source survey in January 1971 (compared to its 1970 survey) shows increases in all but two of the 27 categories studied.

These two, marketing representatives and marketing management, reflect the negative influence of the 1970 economic slump on professionals with commission/bonus compensation plans.

In all of the other 25 categories, there were increases in median salary ranging from a minimal $140 per year for commercial programmers with one to two years of experience to $3,030 per year for systems managers in the medium size (IBM 360/30-50, 370/145 or equivalent) installations.

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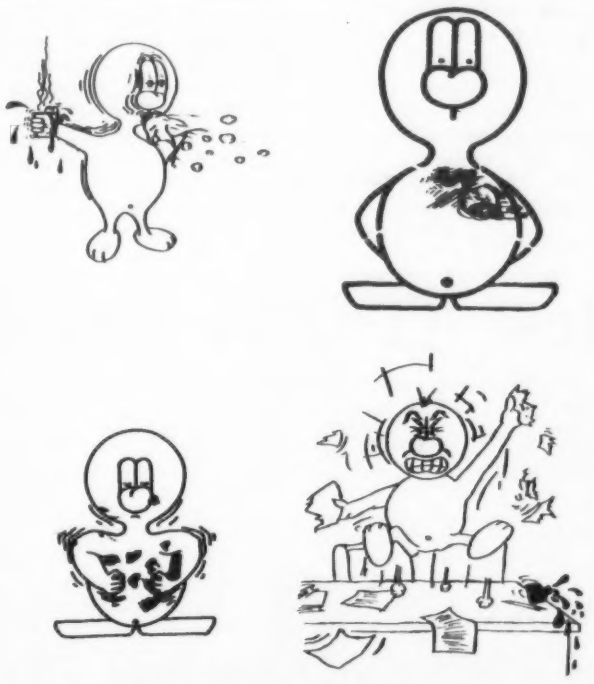

Doctor's Helper

These cartoons lead patients through a medical history interview on a terminal under a University of Missouri research program. The drawings are associated with the following questions: "Have you noticed any coughing or hoarseness lately?" "Have you ever noticed or been told that your heart does something different?"; "Have you noticed your skin being dry, burning, itching or having a rash?"; "How often do you get nervous or upset?" Story on Page 4.

Package Builds Code In Cobol, BAL, PL/1

By Don Leavitt
CW Staff Writer

BOSTON – Source programs that include many housekeeping tasks, definitions of files and program control elements and a standardized program sequence, but no detailed problem-solving logic, can be generated in any of three languages by a software system just being introduced in this country.

The Standard Programming Logic (SPL) system, developed in Germany, produces these "skeleton" frameworks in Cobol, Assembly or PL/1, at the user's option, from parameter cards. Output from SPL can be directed to punched cards, magnetic tape, disk or line printer, according to a spokesman for Cullinane Corp. which is marketing the system in the U.S.

SPL can provide read routines, including OPENs and CLOSEs, for up to 18 input files and the matching of input records by as many as 18 key fields with different priorities to determine which record should be processed next.

The user, however, has to develop and code in conventional terms the actual problem-solving logic once SPL has made the comparisons and set indicators of the results, Cullinane said.

In addition to detailed program logic, the SPL user must insert definitions of the data fields in the input records. The SPL system also has no provision for defining or processing output files. This portion of any program developed under SPL is left completely up to the user.

The SPL-generated program provides data and break control, entry and exit routines and considerable imbedded commentary so that the user can follow the skeleton program, segment by segment. The locations within the skeleton at which the user must add coding are clearly marked * * * * Insert Routine here * * *

The SPL package is modular allowing the user to include provisions for only the language or languages he wishes. The system operates under IBM DOS or OS/360, and even with provisions for all three languages, would require no more than 30K bytes of storage.

The package has also been implemented on the RCA Spectra 70 under TDOS or DOS, Cullinane said.

SPL is priced at $9,000 for the first language under a three-year lease. Price of the second and/or third languages will be about $3,000 each. Cullinane Corp. is at One Boston Place, 02108.

To Measure DP Efficiency

Compumetrics Group Is Born

By Phyllis Huggins
CW West Coast Bureau

SANTA MONICA, Calif. – "It is incredible that we have corporations spending $20 million to $30 million a year on computing and they don't know what they are getting for their money. There is no way today of measuring hardware efficiency, software efficiency or results," said Dr. Richard Hamming of Bell Labs, kickoff speaker for the first meeting of the ACM Special Interest Committee on Compumetrics.

"Here tonight we are founding an entirely new body of knowledge," continued Hamming. "Within 10 years we will be able to predict reasonably well what the software and hardware will do and its uses for management.

"We will have better quality control, somewhat better software and we'll be able to predict better for management.

In 20 to 30 years Compumetrics will be an established field such as biometrics or psychometrics."

The speakers felt the mystique of computers may be abolished forever if Compumetrics succeeds. As Robert Gordon, ad hoc president of the group, said, "A bank will allocate one half million dollars for a computer program without any assurance that when it is finished it will do the job it is supposed to."

Hamming added Bell Labs had begun a multimillion dollar project that he predicted would fail. There was no measurement available, however, to back up his prediction, so management suffered the costly loss.

"You cannot have a science without measurement," said

(Continued on Page 2)

New ICL CPUs May Go to U.S.

By Frank Piasta
CW Staff Writer

NEW YORK – International Computers Ltd. (ICL), England's major manufacturer of computers, has expanded its 1900 series to include several models that compare favorably with the IBM 360/370 models on a price/performance basis.

The systems will primarily be offered to American users with international offices, but ICL did not close the door on other American users.

The new models include four S series processors, a new version of the current 1902A, a 60-million character disk system, a communications processor and several additions to the software library. A remote job entry version of the present 1901A was also introduced.

The 1902S, 1903S, 1904S and 1906S are all said to offer major increases in performance over the earlier A series models which will continue to be available.

The 1906S, the most powerful ICL computer, and competitive with the 370/155, has plated wire memory with a 300 nsec/24-bit word cycle time. Memory sizes available are 128K, 192K, 256K, 348K and 512K words. The memory is four-way interleaved.

Peripheral transfers are accomplished independently through a separate Peripheral Processing Unit which provides up to 43 channels with a total throughput of 11M char/sec. Typical configuration prices range from $50,000 to $150,000/mo.

The 1904S uses a semiconductor memory with a 300 nsec/word cycle time and a 175 nsec access time. Memory sizes available are 32K to 256K words. Main storage may be reconfigured by means of operator switches. The PAC (Peripheral Autonomous Controller) includes 38 channels with a total throughput of 6 M char/sec. A typical configuration can range from $25,000 to $50,000/mo.

The 1903S uses core memory and has a cycle time of 1.5 μsec/word. Capacities from 16K to 128K words are available. Six peripheral channels and 18 interface channels are included in the PAC for a total of 1 M char/sec.

The 1902S and 1902A are disk-oriented with up to eight drives. The systems allow multiprogramming up to four programs on configurations of 16K words or more.

The core memory of the 1902A has a 6 μsec cycle time and is available in capacities of 12K to 32K words. Channel throughput is 320Kchar/sec. The 1902S has a 3 μsec cycle time core memory with 16K to 48K word capacity. Throughput rate is 600K char/sec.

Prices of typical configurations of the 1902A range from $4,000

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Systems People Told to 'Clean Up Their Own House'

By Thomas J. Morton
CW Midwest Bureau

CHICAGO – The time has arrived for the DP professional to "clean up his own act," to start remembering that he is a part of the corporation paying him, to be certain that his systems are providing information, and not just an electronic form of creative expression for his own people alone, and to begin to understand effectively both the man and the job of the man to whom he provides the information.

This was the consensus of the speakers at the 24th Annual International Systems Meeting of the Association for Systems Management.

Wayne E. Swearingen, president of LVO Corp. of Tulsa, Okla., told a packed house that he compared the average EDP report with the red warning lights on the dashboard of a car. Once, a warning light on his car kept flashing, he said, indicating an overheating engine when, in fact, it was not.

The flashing red light was easy to correct; he simply had it removed, he said. In EDP, the correcting was not always as simple, Swearingen continued.

President's Viewpoint

"All the president sees from his systems group (besides a large General and Administrative expense item), is a two-foot stack of computer printout, most of which contains 'control information,'" he stated.

"To apply this to business, that stack of computer outputs is worse than useless to me."

Swearingen suggested that the reams of useless information spewing out of computers under the name of important data could be reduced if the managers of systems took the time to learn how to work through people.

To fill the needs of top management, systems people had to learn something of management to be able to determine the critical information needed by the top and to reduce the temptation of forwarding unwanted "products of his own creative talents," and to bear down on that information "which is critical to the top man."

David J. DeCrane, speaking on data base management, told his audience that the tide had turned. He said that historically EDP managers had been telling functional users in a corporation how they must run their business so that it would comply with the requirements of data processing.

"Now," he said, "it is time for the systems people to clean up their own house."

Defining a data base as "a common definition of data elements used throughout the organization for the preparation of management information," DeCrane said it is now necessary for the DP professional to look at his data elements for redundancy.

It was time, he said, for the systems people to "call things the same name everyone else in the corporation called it; eliminate duplication from file to file; and to consider the time frame in dollar values for information required.

"Don't," he said, "build a general ledger report with the response time of an airlines reservation system just because it is possible to do . . . or possibly more intriguing to do."

DeCrane maintained that a "card system could contain an adequate data base even though the purists said 'only a sophisticated, file organization technique in a tree-like structure constituted a data base.'"

Safeguards

Another point covered by the speakers was the preparation of a center for disaster, both natural and man-made. Costs of preparation, it was said, could never equal the costs of a disaster.

"One disgruntled employee can wipe out a business," a speaker remarked, emphasizing the fact that with the increase of sophistication of equipment and software, the increase in potential loss is proportionate.

"Hardware is the one commodity that is the easiest to replace and the one that is guarded the most," he stated.

New ICL CPUs May Go to U.S.

(Continued from Page 1)

to $10,000/mo while those of the 1902S range from $8,000 to $18,000/mo.

The new disk system for the 1900 series, the EDS (60), with a capacity of 60 million characters, has nearly twice the capacity of the maximum IBM 2314 system. Either seven or nine drives, using 11-disk packs, can be used in a system. Average access time is 47-1/2 msec.

The 7903 communications processor allows communications between a 1900 series computer and remote devices, such as teletypewriters, video display units and communications terminals, over telephone and telegraph lines. It is equipped with a 1.1 μsec core memory in sizes from 16 to 32K 16-bit words.

Software announcements for the 1900 include a data base system and new compilers, as well as a new version of the George 3 operating system.

Two interactive compilers, Basic and Forcon (Fortran), were added to the time-sharing software. Both versions will run under either George 3 or George 4 (paged version of George 3) operating systems.

First deliveries are scheduled for January 1972.

Data Bank to Hold 100,000 Student Files

LOS ANGELES – Records of 100,000 students at eight Los Angeles community colleges will be kept in a central computer data bank.

The system, which will be in effect next spring, will contain no safeguards to prevent misuse of data by college employees, despite recent revelations that at colleges elsewhere school employees leaked supposedly confidential data on political dissenters to the FBI and Army.

Jerard Mueller, director of data processing for the colleges, stressed that the most sensitive information would be excluded from the data bank. In particular, it will not contain medical, counseling and disciplinary records.

The data bank will contain name and address, past course and grades, prior education, current program and participation in extracurricular activities.

Many colleges view this information as confidential but nonsensitive. The FBI and Army, however, have expressed a particular interest in getting information on students who participate in black studies programs or who take courses dealing with the USSR or communism.

Mueller said that policy on data release would be up to the deans of the respective schools, but another spokesman said data would be released to school officials, students themselves and law enforcement officers, but would not be released to prospective employers.

Two Levels

The data bank will be a two-level system. Identifying information and current program will be kept on-line and accessible by IBM 2260 CRT terminals at each school. Other data will be kept off-line.

When the system is fully operational in two years, it will be on an IBM 360/50. Social Security numbers will be used as student identification numbers.

ACM Special Interest Group To Measure DP Efficiency

(Continued from Page 1)

Hamming, "and you cannot have measurement without a science." He told the group that they had only themselves to lean upon.

"The history of mathematics is one where they have screamed and hollered that different things couldn't be done. Then when sufficient pressure was put upon them they found that 'yes, the things we told them could be done, could be done.' Statisticians are now getting into the same unfortunate state. Nothing new will be done with them. This means we are primarily left with ourselves."

Hamming felt it was essential for the compumetrics group to be formed. One man in an organization can put little or no pressure on his management, he reasoned, but if work is being done outside on the subject, then management has to listen.

In addition, when discouragement hits and no one understands, he said, the individual knows where to find someone's shoulder to cry on and get the encouragement.

The other purpose of such a group is to supply individuals with data. Compumetrics has a three pronged approach. The group wants to be able to measure the performance of hardware, software and results. When questioned as to whether the decreasing costs of hardware and the hope for more simplified languages didn't make efficiency irrelevant, one man in the audience said, "We've been saying that since the 1401 days and it still hasn't happened."

Another attendee cited the case of an IBM 360/91 program running 40 minutes. When measured it was found that 60% of its time was in a loop. Six statements were changed and the running time was cut 20 minutes.

Hamming said he felt 10% of computer time was used efficiently and the remaining 90% used foolishly. "We are so bad that we use bad software and bad machines for the wrong things."

Second Study Sees Rise in DP Salaries

(Continued from Page 1)

The survey reveals, for example, that the median annual salary of commercial programmers and programmer analysts with one-year experience has risen 2% from $9,530 to $9,720. With over four year's experience, the salary also rises 2% to $14,080 for 1971, up from $13,820 in 1970.

Scientific programmers and programmer analysts do slightly better than their commercial cousins, averaging $10,590 for six months to one-year experience, up from $10,110, a 1.5% rise. For those with over four year's experience the median salary is $14,350, up from $13,850, a 1% jump.

Systems (software) programmers with one to two year's experience are making $12,530 now, as opposed to $12,100 in 1970. For the same category with over four year's experience the figures are $17,420 and $16,820. Both of these are about 1% increases.

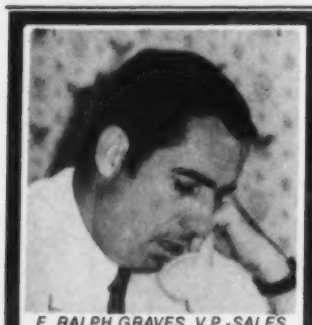
Senior analysts, project leaders and consultants with two to four year's experience are making $15,040 in 1971, up from $14,240 in 1970, an increase at 1%. Those with more than four year's experience are making $17,940, up from $16,790, another 1% rise.

In the area of management positions, programming managers for medium-sized installations (360/30 to 360/50, or equivalent) are averaging $19,070 a year, while in 1970 the median was $17,150. For large installations the salaries grow to $20,890 and $18,480. Both these increases are in the area of 1.1%.

Systems managers for medium installations are making $21,260 and for large, $23,080 in 1971, up from $18,230 and $21,360 in 1970.

Operations managers in medium-sized installations average $14,810, up from $13,420, and at large installations $17,190, up from $16,050.

The complete survey is available from Source EDP, 100 S. Wacker Drive, Chicago, Ill., 60606.



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Symbol System at SJCC

Processors Control Software

PALO ALTO, Calif. – An unusual distributed processing system which assigns traditional software functions to be controlled by hardware will be described in four papers at the Spring Joint Computer Conference.

Begun as an internal project at Fairchild Camera and Instrument Corp., the Symbol system, operating at Iowa State University, uses hardware processors to perform such functions as memory management, I/O peripheral control and compilations.

The system is composed of six processors with hardwired logic. The first translates the "Symbol" language (described as an extension of Algol in the direction of PL/1) into Polish notation strings of commands. These strings are then stored in the system's main memory, consisting of 64K bytes of core and a 256K 64-bit word head/track disk virtual memory for execution by the second processor.

Third Processor

A third processor handles allocation of programs, divided into pages, between the main and virtual memories. All memory addresses are symbolic, being translated in a name table, and all assignments are dynamic, depending on current load. An additional processor is assigned to the task of keeping track of available memory. Data fields are variable in length, which can be changed during program execution.

All I/O operations, including conventional peripherals as well as up to 32 time-sharing terminals, are controlled by still another processor.

The overall system operation is controlled by a system supervisor, a processor with the hardwired equivalent of a software operating system. It assigns tasks, keeps track of errors and handles interrupts. The time-shared software system is interrupt-driven.

A feature that may surprise some observers is the use of a single memory bus to connect all processor to memory. The usual multiprocessor system has multiple memory ports. Multiple ports could be provided without affecting the basic design, a Fairchild spokesman said.

In some cases, the substitution of hardware for software worked very well, according to one Symbol designer. Memory management and peripheral control were cited as particularly well adapted to this approach.

Compilations proved to be a mixed blessing, with very high speed (76,000 statement/min) but insufficient flexibility. A table-driven ROM might have been helpful to remedy this.

The Symbol system was first specified in 1965, with the bulk of development taking place in 1968 and 1969 by Fairchild and a team from Iowa State University. It was delivered on Jan. 20, 1971.

The Symbol was never intended as a production system, according to the designers, but it may indicate the direction in which future trends in computer development would go, with an increasing emphasis on hardwired logic.

Hospital Takes Its Census

WOOSTER, Ohio – A computer installed here is answering the question: "Who's on first"?

The computer also is supplying administrators at Wooster Community Hospital with the answer to who's on second, third and even the fourth floor of the hospital.

The computer, an IBM System/3 Model 10, is providing a floor-by-floor census of the 195-bed hospital, including a count of patients, their bed assignments, dates of admission and the attending physician.

"This type of information is important," said hospital administrator Waldo Landis, "in order to effectively plan for all the necessary services that we maintain for patients.

"It's essential for us to know, for example, when we can expect to have beds available. As the number of patients requiring in-hospital care increases, efficient allocation of our resources becomes even more important.

"Of equal significance," he added, "the computer enables us to more effectively track our financial position. The better job we do of keeping our receivables up to date, the more effective we can be in controlling costs."

Staff members use reports generated by the system to schedule professional and hourly hospital employees to meet the total balanced needs of patients.

Study for NSF Backs Use of Automation For Chesapeake Bay

CW Washington Bureau

WASHINGTON, D.C. – A computer may be used in management and control of the Chesapeake Bay, which affects six Northeastern and Mid-Atlantic states directly as a major regional and national resource. The research plan was outlined in a report submitted to the National Science Foundation.

The report calls for establishment of a detailed and complex data management system, with a 360/91 computer, including inventory and relationships of all elements, natural and man-related, involved in the bay and its drainage basin; lists research projects that should be performed; and suggests an organization to manage the large-scale research program.

Begun Last July

The study, part of NSF's former program of Interdisciplinary-Research Relevant to Problems of Our Society (Irrpos), began last July and was conducted by scientists and engineers of John Hopkins University, the University of Maryland and the Virginia Institute of Marine Sciences. It was financed by NSF.

The data bank to be developed would be available to assist scientists as well as regulatory and legislative decision makers and others.

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Rural MD of the Future--Part 1

Health Plan Creates New Hope

By Thomas J. Morton
CW Midwest Bureau

SALEM, Mo. – When a patient enters Dr. B.J. Bass' office in this rural Missouri town, he gives the doctor's secretary his name, age, address, birthdate and birthplace, dates of his last visit to the doctor, why he came in before and the reason for the current visit.

The nurse also obtains information on what medication he is using (if any), his allergies, his next of kin and his insurance coverage.

None of this information is used in the computerized program in which this patient will soon participate.

The secretary then assigns the patient a number. All measurements and readings, tests and analyses are recorded in that number known only by the doctor and his staff when the number is identified with a patient.

Height, weight, temperature, pulse and respiration rate are determined in the traditional manner and recorded for later input.

Automatic blood pressure is taken on the patient, and again the readings are hand-recorded for later input.

"...Doctors, engineers, lawyers, specialists in equipment, data processing, electronics... all participated (the doctor pointed out the window to where an elderly man was coming up the walk) to give that man out there the best medical care I can provide."

The patient's vision and hearing are tested, recorded for later input, and the patient receives a chest X-ray.

The X-ray is first examined by Bass, then forwarded to a radiologist in the medical school of the University of Missouri at Columbia. Both the radiologist's consultation report and Bass' comments are entered into the numbered patient's file.

In x-ray, the doctor can use his Automated Physician's Assistant (APA) system to obtain consultation from both the examining radiologist who has already entered his comments into the computerized patient record as well as participate in the Missouri Automated Radiology System (Mars).

Mars enables Bass to compare his findings with a bank of other radiological information on the CRT terminal in his office.

Mars is programmed towards the mathematical probability of the known lung and cardiac diseases and offers the on-line general practitioner the consultation experience of years of work, speeding and improving diagnostic techniques.

Routine urinalysis is performed on the patient at the clinic, and the results entered into his records. Blood samples are sent to the medical school in Columbia for automated analysis.

Next the patient receives an electrocardiogram (EKG) examination. This provides the nurse with a printout record for submission to the doctor and places the results on magnetic tape for on-line input to the computer.

Next the patient is interviewed by the Automated Patient History Acquisition System (Aphas) developed by the Missouri Regional Medical Program.

Sitting at a CRT terminal, a slide screen and a tape recorder, the patient is asked questions verbally (on tape) and visually (on the CRT or by slide).

The patient answers the questions, first generalized to locate specific complaints, then localized towards specifics. The patient's answers lead the program into the specific areas of complaint, where questions then lead the patient towards specific disease or injury symptoms.

The patient's history is both recorded into his file and printed out, along with probabilities on disease specifics for the doctor. The printout is obtained in a room to which no patients have access.

Then, after all the information work has been taken and analyzed, the printout received and the testings completed, the patient sees the doctor.

The doctor now has a complete report on the patient, past history and current complaint along with consultation-like analysis of the specific complaint or chronic ailment.

One more automated feature serves Bass; a bank of more than a million pages of scholarly and scientific articles from over 520 journals has been microfilmed and stored for fast automatic retrieval.

If Bass requires information on any specific ailment or medical findings of a particular area, he can query the computer in Columbia and receive a "fax" copy of the material requested.

"We have been treating patients here," Bass said, "since 1953, and if this system were not available we would continue to cure the sick and the injured.

"But with this system, we are more effective, much more flexible, use much more information in many more ways than was practical before."

APA is the result of mixed disciplines working together towards a goal of just one of the disciplines, that of medicine providing better health care in those areas where facilities for research and consultation are non-existent.

This is the prototype of a system that the creators hope will spread across the country bringing with it a new life style for the rural family doctor, new health care for the people who have never had it.

The doctor described it best.

"Telephone men, IBM men, doctors, engineers, lawyers, specialists in equipment, data processing, electronics, various fields of medicine, and people all participated..." (he pointed out the window to where an elderly man was coming up the walk)..."to give that man out there the best medical care I can provide."

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Tech Sessions Spice JCC Nights

ATLANTIC CITY, N.J. – With no competition from the "night life," the Spring Joint Computer Conference May 18-20 will feature several evening technical sessions of interest to users.

The first, Tuesday at 8 p.m., will cover the competitive evaluation of vendor-supplied interactive systems. Organized by representatives of Ford Motor Co., the study will examine the characteristics of interactive systems from the standpoint of on-line usability.

There will be two evening sessions Wednesday, one on the "hot" issue of ecology, the other on possible solutions to the world literacy problem.

Participants in "computation, decision making, and the environment" will include educators and scientists.

The world literacy session will evaluate Project Dovack, which has been used to teach adult illiterates.

Another Tuesday evening meeting will be held by ACM's Special Interest Group on Computers and Society. It will feature Lawrence M. Baskir, chief counsel for Sen. Sam J. Ervin's recent hearings on Privacy and Data Banks.

News Wrapup

Court Orders Probe of Army Spying

WASHINGTON, D.C. – The constitutionality of the Army's surveillance of civilians must get a hearing in Federal Court, according to a ruling handed down last week by the U.S. Court of Appeals here.

A suit filed in February 1970 by the American Civil Liberties Union on behalf of the Central Committee for Conscientious Objectors and individuals who felt they had been spied upon was the issue. It had been dismissed last year at the government's request by U.S. District Court Judge George L. Hart Jr.

The suit now goes back to Hart, who told CW that it could take months before anything definitive occurs.

Rapid Transit System to Run Through Campus

WASHINGTON, D.C. – A personal rapid transit (PRT) system which will be computer operated will be built in Morgantown, W. Va., the Department of Transportation announced last week.

The demonstration transit project will be built around and through the West Virginia University campus in Morgantown and will be designed and managed by the Jet Propulsion Laboratory of the California Institute of Technology.

JPL has selected the Boeing Co. to develop and construct prototypes of the vehicle system and the Bendix Corp. to design and develop the automated control and communications system.

Officials Happy With Computerized Vote

COLUMBIA, Mo. – Boone County voters recently selected their candidates for office with a computerized ballot and election officials were satisfied, although the procedure was not as efficient as had been hoped.

Final totals were not available until two hours after the expected completion time.

The county clerk said that this was a "very complicated election." Nearly 5,000 write-in votes had to be counted at polling places and ballots from all over the county had to be certified before going to the DP center for tabulation.

Problems with the reader also delayed the election. And officials detected a miscount by the computer and returned the ballots for correction.

Citizen to Protest Variance for IBM Sign

MAHWAH, N.J. – A local citizen plans to take legal action against the Township Committee for granting IBM a use variance to erect a company sign at the entrance to its new $10 million facility in Franklin Lakes.

The committee felt that denial of the variance would create a hardship on IBM and a traffic hazard by making it difficult for visitors to find the plant.

"You've sold the people of Mahwah down the drain!" Louis Rizzo charged after the vote. "It's disgusting that you don't even defend your own ordinance," he said, referring to the sign ordinance which allows a maximum 15-square-foot sign. The local sign ordinance bans commercial signs in any residential zone.

Computer Has Big Say in Tax Meeting Date

PHOENIX – Whether the special session on taxes and school financing will come this month will depend on a computer to determine all the facts and figures.

"Until we know where we are, we're kidding ourselves in discussing a specific date," said Senate President Bill Jacquin (R-Tucson).

Dr. Arlyn Larson, legislative assistant to the speaker and the president, said that several different programs will have to be set up and run "before they (the lawmakers) find one agreeable."

The computer will take data on school statistics and the assessed valuation for 1970-71 and figure how the flow of state aid to each district would have been affected if certain proposed plans were in effect now.

A Man's World? Not So, Say Crimefighters

HOUSTON – Fifteen women using a computer to analyze facts about organized crime are carrying Women's Liberation one step further while allowing male agents to be released for field work.

Gerald Shur, attorney in charge of the intelligence and special service unit of the Department of Justice, said that use of women to analyze computerized data on the activities of members of organized crime has proven very effective.

The program is called Organized Crime Intelligence Language. It feeds data about organized criminals into the computer, Shur said, and the analysts can study the facts and get an insight into the next move of organized crime.

It's Rough All Around -- Even for a King

CAMBRIDGE, England – A King of England has falsified computer accounts worth $720 in an attempt to beat his firm's computer because it was a "horrible impersonal machine," his lawyer told a court.

Henry King, a wages clerk, pleaded guilty to stealing the money and was fined $240 and ordered to compensate the company within two months.

"After hearing several people say it was impossible to fiddle a computer, I began to wonder if it was true, so I tried it out," King said.

Ryan to Quarterback DP Activities for House Unit

CW Washington Bureau

WASHINGTON, D.C. – Former pro football quarterback Frank Ryan is preparing to call some of the computer signals for the House of Representatives.

Ryan, on leave as president of his own computer firm, Frank Ryan Computer Services in Cleveland, had been a reserve quarterback with the Washington Redskins the past two seasons.

He recently announced his retirement from the Skins, and on April 1 he became a part-time consultant with the House Administration Committee.

On July 1, Ryan will move into an appointive post as director of information services with the administration unit.

He will aid in the design, purchase and installation of computer systems and the coordination of EDP activities for the House. He will also act as the congressional coordinator of computer operations with the Office of Management and Budget.

DP Profile

"Frank is eminently qualified for the job," said Louis Freed, assistant staff director with the administration committee.

Ryan was among a number of individuals interviewed for the newly created position. "It was the idea of Rep. Wayne L. Hays (D-Ohio), chairman of the committee, to bring in a person with computer expertise who would work with someone who has congressional expertise." Freed is the congressional man, having spent 13-plus years in the House and Senate.

'Catching Up'

Since Ryan is still new to the consulting post he now handles, he admits that he has "a little catching up to do. I'm going through a learning process; I've never been in government circles before."

One of the projects Ryan will become involved with is a display/retrieval system that would enable the House to handle voting and quorum calls on the floor of the lower chamber [CW, March 3]. The system was designed by Informatics Inc. and the design was delivered to the clerk of the House about April 1.

"At this stage," Ryan said, "I'm taking a look at Informatics' proposal. We have no specific plans for letting hardware bids for the system right now. This will be a matter of course; we want to review the situation thoroughly. Rather than rush into something, we'll go at a steady pace which will assure some success."

As a pro quarterback, Ryan's deliberateness aided his success. During a 13-year playing career with the Redskins, the Los Angeles Rams and the Cleveland Browns, Ryan passed for more than 16,000 yards and three times won All-Pro honors.

He has a Ph.D. in mathematics from Rice University, and his Cleveland-based firm, he said, offers a total systems approach in the sports area. The company helps football teams, for example, to use a computer to speed analysis of trends and collating of information. The Redskins coaching staff last year and this coming season is a Frank Ryan customer.

Looking ahead to his new position on Capitol Hill, Ryan said: "I've gotten some partial impressions so far. There is a great need for automation in several areas, and I have observed a great spirit of cooperation on the Hill" to help put data processing to work for the Congress.

NSF Awards Miller 2-Year Grant to Study Privacy, Computers

CW Washington Bureau

WASHINGTON, D.C. – The National Science Foundation has awarded a two-year $160,000 grant to Arthur R. Miller, a law professor at the University of Michigan and a noted privacy advocate, to search for ground rules protecting individual privacy in the computer age.

Miller, author of *"The Assault on Privacy – Computers, Data Banks and Dossiers,"* was lead-off witness earlier this year before Sen. Sam J. Ervin Jr.'s (D-N.C.) Subcommittee on Constitutional Rights. The Senate group held hearings on computers, data banks and the Bill of Rights [CW, March 3].

The first phase of the NSF-sponsored study will take 12 to 15 months and will involve an investigation of the existing practices in information handling by social scientists, university information systems and some government social welfare agencies.

There will also be studies overseas, where some countries, according to NSF, are further ahead in formulating protective policies.

The second phase of the project will be evaluation of the data and experience gained and publication of a report offering a computer-privacy-confidentiality program for possible use by data handlers.

The paper will also analyze the legal implications and consequences of computer information activities, and explore the feasibility of safeguards.

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A Rather Expensive VW

NEW YORK – Under a new program to go after motorists who have three or more traffic tickets outstanding, the city's Parking Violations Bureau towed away the first of 375 cars – a Volkswagen bus owing more than $3,400 in unpaid parking tickets.

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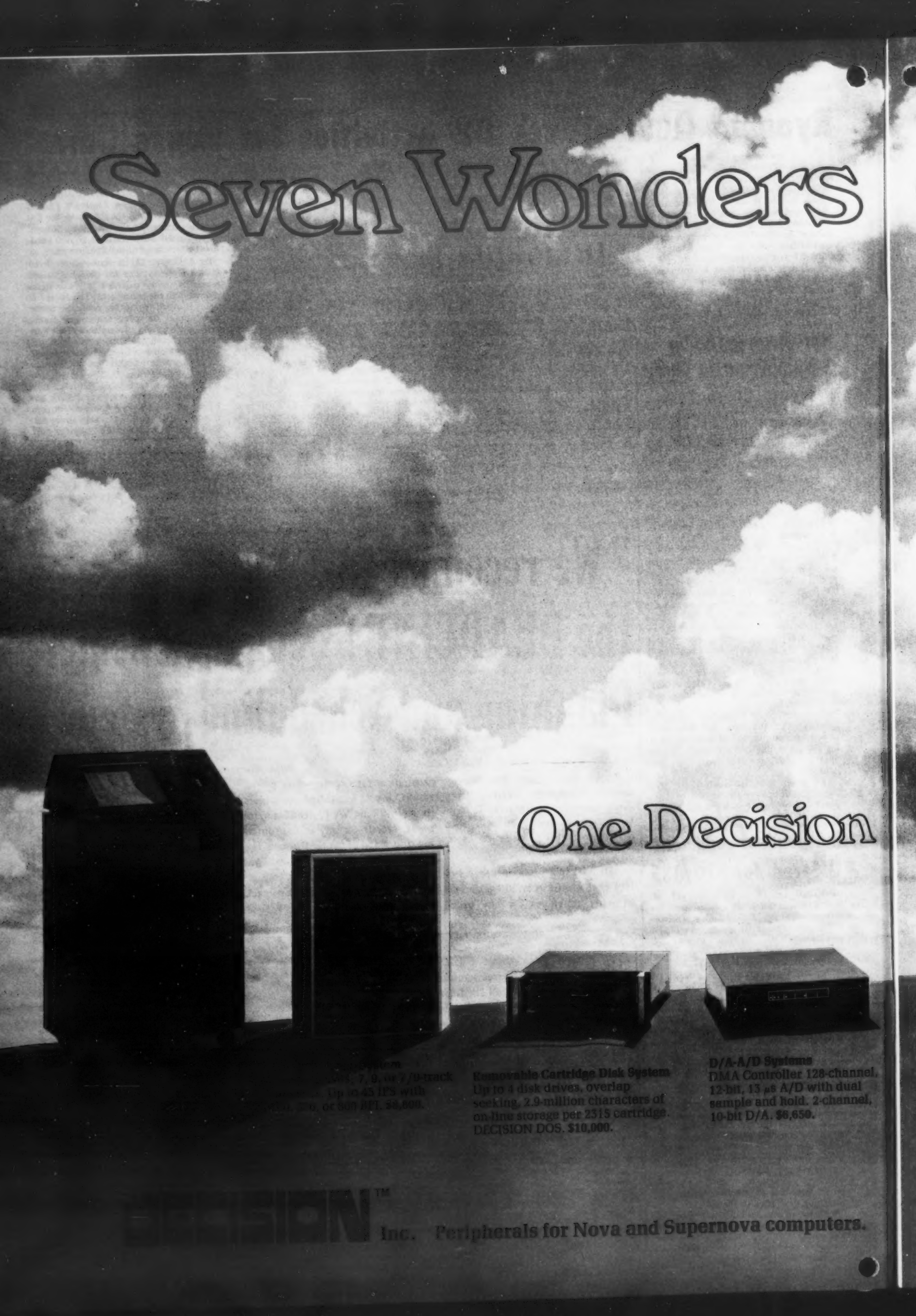

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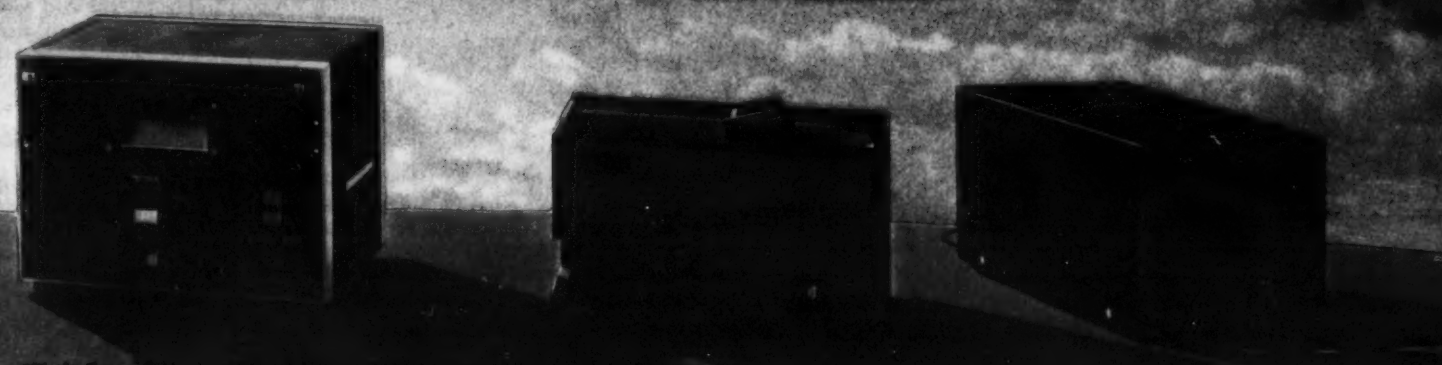

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Editorial

The Special People

At the risk of recreating the computer mystique, it still must be said from time to time that computer people really are special.

It must be pointed out not to make them feel superior but to remind them that they have a special responsibility.

Like the executive and the military commander, their mistakes tend to be magnified out of all proportion to the events that led to the mistake.

This is the reason that executives and commanders often seem to ponder an unnecessarily long time before making apparently simple decisions. And this is why computer people must avoid snap decisions on *apparently* simple matters.

It's a nice feeling to know that one of your applications is saving a lot of humans a lot of boringly routine work.

But we must also take responsibility for the simple mistakes that create problems for thousands of people.

'Now You See What He Really Looks Like'

Letters to the Editor

CDP Holders Have Questionnaire

We share Donald R. Collins' interest in improving the CDP and the professionalism which must accompany the exam to make it meaningful [CW, Letters to the Editor, April 14]. Since February, over 40 CDP holders in the Chicago area have been actively engaged in developing a program to meet the challenge. We are now concentrating our efforts in three areas: the examination itself, dissemination of knowledge about CDP and what it means, and what type of an organization we should be – independent, affiliated or what.

We are currently working on a questionnaire (such as Collins suggested) and would appreciate any contact with other local CDP groups doing work of a similar nature. With a pooling of efforts, we have a great opportunity to produce some definitive results.

We encourage others to join with us at the local level to continue this effort.

John A. Driscoll, CDP
Chairman

Arthur A. Chapman, CDP
Secretary

Ad Hoc Association of CDP Holders

CNA/Insurance
310 S. Michigan Ave.
Chicago, Ill. 60604

Here's 'Yes' for Involvement

In response to Donald R. Collins' request for opinions regarding CDP organization, questionnaire, etc., please consider this a very strong "yes" vote in favor of Taylor's involvement.

As a CDP holder of the first water (Nov. 23, 1963) and as a member of the 1964 CDP test review board, I know I speak for many when I say that CDP should "evolve away" from DPMA, and be elevated to the position foreseen by myself and many others eight years ago. Somebody "inside" the business – like Taylor – needs to make something out of it. A questionnaire would be a hell of a good start!

A.K. McKechnie

Chicago, Ill.

What Is DPMA's 'Service'?

The Taylor Report, "Members Look More Like Markets From Park Ridge" [CW, April 14], really hit home with me.

I am a member of the Eastern Connecticut Chapter and have yet to find out what the "service" is. They need dues money, they need contributions, they need company participation. But for what?

In fact, it is a social organization which because of small political cliques operates under the guise of being a service to its members when in reality its purpose is so that members can mingle and meet – nothing wrong with that, why don't we admit it?

Russ Blakeslee
Data Processing Manager

Plastic Wire & Cable Corp.
Jewett City, Conn.

More Information on Vidpi

The article on "Vidpi" Blind Programmers in the DP field is of much interest to me [CW, April 17].

I would appreciate your sending to me any further information you may have available or a place of procurement for further information.

K.C. McNeeley, Manager
Publications Programming.

IBM Distribution Center
Mechanicsburg, Pa.

For information on Vidpi, we suggest you write to Richard J. Snipas, Bradford Computer & Systems, 220 East 42nd St., New York, N.Y. 10017. Ed.

Operation Has Several Packages

Someone is being misled about the fees charged by Operation Match for its dating service. I was recently visited by a representative of Operation Match, who tried to sell me a 36-month plan including computer matches, psychological testing and background checking for $525.

I was told that the $525 plan was the only one available through the company. This is in direct contrast to your article of April 7, 1971, "Marriages Mean Mismatches in Dating Business," in which you stated "Operation Match" does not charge the hundreds of dollars fees common to other such services. Twenty dollars for "two to five" matches a month is the fee for one year . . ."

Theodore A. Jean

Teaneck, N.J.

"Operation Match" President Stephen Milgrim explained that there is one "package" available in each major market, and that the $20 package (which now costs $25) is marketed, for example, in the Boston metropolitan area, but not in New York, New Jersey, Los Angeles or Chicago.

Milgrim said the costs of hiring psychiatrists and establishing offices for every geographic area would be prohibitive, so marketing in many regions is done through the mail. In these regions, the one-year, one-time $25 fee is available.

In other major metropolitan areas, the larger three-year package, with the "investigated clients" and in-depth personnel testing (rather than computer-processed profiles) is offered. Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Government, DP Industry Must Learn to Communicate

D.C. Data-Line
By
Alan Drattell

WASHINGTON, D.C. – A key to success in the DP community is communication. And to a large degree we fail miserably as an industry in communicating with those outside our profession.

The results of what I have in the past called our "talking to ourselves" syndrome are beginning to be felt. One area is in our dealings with the Federal Government.

At a recent hearing before the Board of Governors of the Federal Reserve System, Bernard Goldstein, president of the Association of Data Processing Service Organizations and head of his own company, United Data Centers Inc., said that he had had one day to brief the board's staff on EDP prior to the hearings.

"EDP is a pretty complicated subject to try to understand in one day," Goldstein correctly told the board.

And just a few months ago at a hearing regarding professionalism before the Wage and Hour Division of the Department of Labor, the gap that exists between the DP world and those outside it was clearly in evidence. One of the examiners asked a computer industry witness for an explanation of software. After it was given, he commented, "I can't say I understand."

These two anecdotes clearly pinpoint the mushrooming problem: if we cannot communicate what we mean to the government, how can we hope that the government will come up with rules and regulations that will aid rather than hinder our development as an industry.

First, let me dispel one thought. Those of us who would prefer that the government stay out of our business are being naive. Industry has shown that no matter how much it decries government involvement it traditionally seeks government relief and judgment on various matters.

The recession is a notable example. Industry has not provided the leadership to ease the unemployment problem. Realistically it could not because it was hurting financially. It instead has looked to the government which in its benevolent bumbling may yet come up with something substantial. Whether the government does or not, industry's reliance on government in this area intensifies the precedent set in the past: let Uncle Sam do it.

With data processing emerging in various quarters as a national issue – at the Justice Department in the antitrust filing against IBM, through the Federal Communications Commission in the microwave area, in the Congress with the privacy and credit questions – the Federal Government will become more and more involved in the activities of our industry.

A government that understands our business will be in a better position to deal more fairly with us. A government that must cut through a curtain of jargon to try to understand us will lose a lot in the translation.

Another impediment we must overcome is the innate fear that some in the government have about computers. They're the same people who have been told that a computer messed up their credit rating or fouled up their retail store billing. While they've never come close to a computer, they feel they've been victimized by it.

The EDP industry has a great deal of groundwork to do to overcome the misconceptions we have ourselves helped to create. It is a corrective job that each of which each of us in some way must contribute.

Applications May Be Outstripping Technology

Are Visible Computer Errors Only the Iceberg's Tip?

The Taylor Report
By
Alan Taylor, CDP

In the recent ABM arguments some stress has been placed on Prof. Licklider's statement that current computer technology was inadequate to prevent errors occurring in our software systems.

Unfortunately, partly because of the political environment and partly because of the natural unwillingness to face unpleasant truths, the impact of the statement – that current systems are untrustworthy – was ignored by the computer community at large, and was certainly ignored by me.

In recent months, however, I have been studying the occurrence of computer errors, to understand them a little better. My study was brought on particularly by a remark by James Moffat, CDP, assistant registrar for data processing at Arizona State University in Tucson.

He told me he felt the criticism printed in this column about the university giving unknown grade codes was ludicrous, in view of the many other larger errors which had been made, and which they had "got away with"!

DP Managers Agree

There is no doubt in my mind that many DP managers would agree with Moffat. They believe that there are many, many errors occurring in DP systems today – both in the software prepared by the hardware manufacturers, and prepared by themselves in house.

Very often the actual volume of errors, combined with the fact that many of them only occur under unusual circumstances, make them apparently too expensive to do anything about.

In particular, any systematic attack on them is simply too expensive to be considered worthwhile. This means that errors exist which are, or can be, known about but which may be ignored and left in the DP systems.

Ignored for Five Years

Just how long errors can be ignored was brought out vividly for me in San Francisco at the Spring Conference of the Association for Systems Management last month. After my talk one systems analyst won a big cheer from the other systems types by pointing out that his experience was that the DP group never got around to correcting non-vital errors – and that he had been waiting for some for no less than five years!

That cheer told me clearly that this ignoring of even acknowledged errors was not just an isolated incident, but instead was a usual occurrence.

At the same time some computer errors do get attention. We know this when we see the amount of time given to recompiling and re-recompiling systems that have been "implemented" long ago, and when we look at maintenance budgets.

But the decision as to which error will get handled, which will be discovered but not ignored, and those which simply won't be looked for or acknowledged if found, must have some logic behind it. And I think it has – the old, standard logic of the squeaky wheel. And naturally, the bigger the wheel that squeaks, the more likely it is to get attention!

Three Samples

Following up these two points – the Moffat comment and the San Francisco cheers – I looked at three particular cases where you would reasonably expect such conditions not to occur – where indeed you would not expect to find many errors.

These cases have all been commented on in the column before, for different reasons, and so form a random, if small, sample. They are the Master Charge case, the Educator's Consultants case and the Tucson case.

Master Charge has plenty of money to hire the best analysts, Educator's Consultants makes a living selling the use of its software, and the university knows enough about data processing to be able to give postgraduate courses in it. These cases have all been commented on in the column before, and for different reasons. They therefore do form a random, if small, sample. What I did was to look for hidden errors that had not been known about when they were first talked about here, but which have since become visible.

Master Charge – 4 New Errors

Take the Master Charge case. Originally it was selected as showing arrogance in the placing of the mailing address in a non-standard position at the top of the envelope where it could be obscured by standard metering. Later, however, this system was found to also:

- Issue bills that were arithmetically wrong – by hundreds of dollars.
- Issue bills that called for payment before the billing date.
- Confuse the reader with unnecessary data and abbreviations.
- Be unable to produce confirmatory data when promised – or for months later!

None of these were found in the first go-around – only afterwards. They can therefore be considered as being hidden errors.

5 New Errors

Nor was the Master Charge alone. The Educator's Consultants case had the original error of using too short field lengths, and then using the field lengths that were available badly. Later it was discovered that in addition to these it was possible for the system to:

- Completely omit grades.
- Completely omit subjects taken.
- Allow attendance reporting to fall two weeks behind.
- Confuse all-round mediocrity with good classroom work and lousy homework.
- Overprint computer data over important printed data, thereby losing both the computer-generated and the printed data!

Tucson Case – 6 Errors

Even more daring than either of the others, however, was the Tucson case. Here it turned out that the original complaint, not checking inputs, was invalid. Perhaps that is why it was found to have more hidden errors than the others.

In this case it was later found:

- That the operator had failed to obey run-sheet instructions.
- Obsolete forms had been used, omitting vital information.
- The university's rules were being broken by faculty members.
- Valid complaints resulted in the blame being placed on the innocent.
- The college failed to check the validity of the output.
- Bad coding of descriptive data (1 for male, etc.) had been used.

Now, I don't know what you make of these facts – the number that were discovered when searching into apparently simple cases, or the complaints of the systems mean that nonpriority cases just don't get attention.

I don't even know what I really get of it – not just yet. But I do think that it indicates that computer errors are a much more important topic of consideration than we have currently realized.

At the very least, I think that the current public distaste for computers is based on a veritable epidemic of computer errors (which is certainly with us), and much worse, it may be that the visible errors are only the tip of the iceberg.

And that's a really chilling idea.

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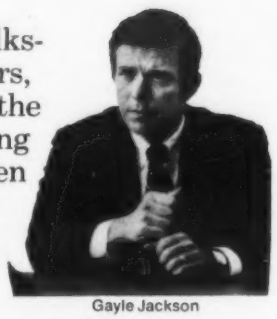
IBM put Volkswagen back on the road three days after a total-loss fire.

On Friday, February 26, Volkswagen South-Central Distributors, in San Antonio, Texas, burned to the ground. The loss threatened to bring business to a halt for 70 Volkswagen dealers in Texas, Oklahoma, New Mexico, Colorado and Wyoming.

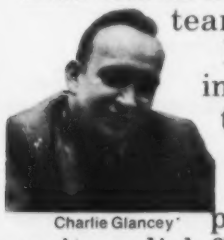

Gayle Jackson

The entire computer installation, including a $1 million System/360 Model 40, was destroyed. All that was saved were the magnetic tapes containing the company's records.

Skip Schroeder Badger Robertson

Fortunately, the Volkswagen Data Processing Manager followed his company's emergency procedures and made sure they were locked in the computer room's fire-proof vault.

But even before the fire was out, Gayle Jackson, IBM branch manager in San Antonio and his local team (including Skip Schroeder and Badger Robertson) had already gone into action. They had the monumental task of putting together a $1 million computer installation, including a System/360 Model 40 computer, two printers, two card readers, two control units, a disk file, four tape drives, and eight keypunches. And they had to do it over a weekend.


Charlie Glancey

At various IBM locations around the country, men went into action under the coordination of Don LaPointe at Western Regional Headquarters in Los Angeles.

Don LaPointe

In Poughkeepsie, New York, Charlie Glancey assembled a team that located, tested, and packed a Model 40 and all the other items that must accompany it.

In Endicott, New York, George Martone and dozens of other IBM people worked on getting together the needed peripheral gear.

Pete Weber

In San Jose, California, Jim Klemmer gathered 12 boxes of replacement disk packs for those that had been destroyed by the fire and airshipped them to San Antonio. Things were starting to fit together.

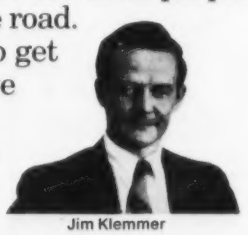
In the meantime, Pete Weber, IBM national account manager for Volkswagen, was flying to San Antonio. On Sunday, he met with Volkswagen executives and outlined a plan to install the new equipment in the basement of the local IBM office.

First, new disk files arrived from another IBM location in Texas. Then, the disk packs from San Jose. The computer tapes saved by the vault were tested on another IBM customer's computer. They were fine.

George Martone

On Monday afternoon, after an 1800 mile trip, the van arrived with the Model 40. A task force of 14 customer engineers worked through the night to assemble, install, and test the system.

By 8:00 a.m., Tuesday, March 2, a new data processing installation, duplicating the one destroyed, was ready for business. More than 100 IBM people had worked to get VW back on the road.


Jim Klemmer

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Random Notes

File Handling Strengthened Under 'Oscap' T/S Monitor

NEW YORK – File handling capabilities being added to the Operating System Communication Application Package (Oscap) will, according to Complex Systems Inc., make the real-time monitor a "total system" for the IBM OS/360 user who has on-line requirements.

Oscap is being adapted specifically to support two Comress-developed products; Amigos, a replacement for IBM's Index Sequential Access Method (Isam), and Data Base Access Language, a replacement for Data Language/1, part of IBM's Information Management System (IMS/360). It operates under OS/360, MFT or MVT, requires from 10K to 30K bytes of core, and costs $40,000 from 1250 Broadway, 10001.

'Curs' Reports I/O Used Under 'Power' Spooling

WASHINGTON, D.C. – Users of the IBM Power spooling system on 360s can read out the I/O utilization statistics developed by the system with the Computer Utilization Report System (Curs) from Computer General Corp.

Without Curs, the user would have to write his own routines to access the Power-generated data, the company said. With the $950 package users can have reports by function or department, or by day, week or month. The firm is at 1660 L. St., N.W., 20036.

Service Helps Architects Pick Appropriate Product

NEW YORK – Architects are able to get lists of products appropriate for a specified type of building project, by generic name, through the Idac Systems Division, National Design Center. Idac's Building Information Program (Bip) also provides index keys so that users can access detailed information, product by product, from a microfiche library which is supplied as part of Bip.

The computer-generated lists of products cost from $100 to $470, depending on the complexity of the project. The microfiche library of 20,000 products plus a reader rents for $85/mo, from 425 East 53rd St., 10022.

Cobol Compiler Is Adaptable

SUITLAND, Md. – A Cobol compiler that conforms to a subset of the ANS specifications has been developed for the Univac 418-II by Johnson and Mattingly Associates, who note that the logic can be easily adapted to other machines.

The 418-II Cobol includes a symbolic debugging capability and provisions for a subroutine library. The compiler will operate on any 418-II with 19K words of core, four tape units and a Univac 1004 card processor. It costs $20,000, from 3524 Silver Park Drive, 20033.

Film Processors to Get Service

DALLAS – Film processing organizations may soon be able to calculate pricing information, by order, and print the data on the order envelope, with a time-sharing system now under development at General Logics Inc.

The system is expected to determine full retail and discounted prices, and to show, on demand, the status of all film being processed. The firm is at 1545 Prudential Drive, 73735.

Users Coding in Cobol

Btam Unneeded With 'CRT-Interface'

By Don Leavitt
CW Staff Writer

PITTSBURGH, Pa. – The writing of application programs for in-house IBM 2260s or plug-to-plug compatible units is said to be made much simpler under DOS/360 with the CRT-Interface software system from Westinghouse Tele-Computer Systems Corp. (WTSC).

The package eliminates the need for IBM's Basic Telecommunications Access Method (Btam) or any other communications handling software, WTSC said. It also allows the use of Cobol in data communications, since users are able to write applications in Cobol, Assembler Language or PL/1.

With multithreading of messages, the system is designed so that an application program is able to handle any number of terminals.

The multithreading simplifies application programming, and permits it to be based on conversational single terminal logic, according to a WTSC source. Users are able to add new terminals to the system without complex programming changes.

With the CRT-Interface package, users can gain access to any file regardless of its structure. Some otherwise comparable telecommunications monitors do not provide access to index sequential files, but CRT-Interface does, WTSC said.

An optional feature of the WTSC system provides program "roll-in/roll-out" so that the same core storage space can be used, alternately, by more than one application program.

CRT-Interface will be expanded to include support of remote 2260s and comparable units by the end of the year, a company spokesman noted. The package is written in a generative form of Assembler so that it can be tailored to the user's specific requirements. Functioning under DOS/360, the partition size needed would depend on the applications and the tailoring of the package.

The CRT-Interface monitor can vary from 2.5K to 11K bytes of storage. Allowing room for application programs, users should expect to devote at least 32K bytes to the system, a spokesman estimated.

The system costs $2,500 under a five-year lease which includes two man-days of on-site installation support and three years of maintenance and program updating. After five years, the program becomes the property of the user, WTSC said. Westinghouse Tele-Computer Systems Corp. is at 2040 Ardmore Blvd.

PL/1 'Load-and-Go' Processor Geared to Scientific Functions

BROOKLYN, N.Y. – IBM OS/360 users can compile and execute scientifically oriented PL/1 programs with the Polytechnic Load and Go (Plago) compiler/interpreter developed by Polytechnic Institute of Brooklyn. (PIB).

Designed primarily for student users, Plago designers did not implement areas of PL/1 more commonly used for business data processing than for scientific work. For this reason decimal arithmetic is not available.

The only files supported by Plago at this time are SYSIN and SYSPRINT. Use of any other file name in the Declare statement will be flagged as a syntax error. Likewise, Read and Write statements are prohibited.

The Initial attribute of the Declare statement is also not supported by Plago. No character string parameter can be passed to the main procedure in Plago, the developers said. In IBM's PL/1 (F), this can be done using the Parm option on the Exec card.

Because it is a load-and-go processor, Plago cannot be used to generate object decks and the PIB system will not accept object decks of programs compiled under the IBM processor.

Avoiding much of the storage and processing overhead of the IBM language processor, the Plago translator is said to be 50 times faster than the IBM compiler. It is also six times faster than IBM-generated programs in execution time.

Typical of the jobs Plago has solved for PIB students is a maze search which took 1.31 seconds from entry of first card to printout of answer.

The only legal Plago variable attributes are fixed (binary, not decimal), float (single and double precision), label, character and character varying. All variables are given automatic storage class attributes, PIB said.

The present Plago requires 80K bytes of core, although this can be modified by the Plago group at PIB. Plago can run under any OS PCP, MFT-II and MVT system with or without Hasp, a PIB source said.

Support for large core storage (LCS) is a standard part of Plago and allows the system to run in either fast or slow core with no apparent difference to the user. The Plago package is available for $500, which covers all future updates and new versions, from 33 Jay Street, 11201.

'Mumps' Eases Access To PDP-15 Data Base

MAYNARD, Mass. – Designed for applications in which up to 22 users simultaneously require access to a single data base, Mumps (Massachusetts General Hospital Utility Multi-Programming System) has been adapted by the hospital for use on a DEC PDP-15 with 16K words of core.

Originally intended for medical applications, the system can be used for any information storage and retrieval functions and is available from the company, without charge, to PDP-15 users.

RCA Providing 'CIF' System To Spectra-Equipped Banks

MARLBORO, Mass. – Banks with RCA equipment can build and access a combined data base containing all customer account relationships and activity with the on-line Customer Information File (CIF) system now being distributed by RCA.

Developed by the Fidelity Bank of Philadelphia, the RCA CIF initially provides inquiries through CRT units into corporate accounts, and individual savings and checking accounts.

By combining on-line inquiry and file building with a data base that shows a bank's entire experience with a customer across all applications, CIF enables the bank to improve its service while achieving significant operation economies, RCA said.

Input of new data into customer records in the RCA CIF system is done only once through the use of RCA Video Data Terminals – CRT devices with attached typewriter keyboards. This data is automatically cross-referenced among all customer-related accounts. Using the same VDTs, data can be retrieved by keying in either the customer's name or account number.

Implemented on an RCA Spectra 70/45 with 131K bytes of real memory under TDOS, the CIF system will function also on the RCA 6 under DOS, according to a company source. The system requires a 590 direct access disk unit on the 70/45, an 8590 on the RCA 6, with the number of disks assigned to CIF dependent on the number of customers and the amount of data to be stored in each file.

The RCA CIF system is being made available without cost to all current and future users of the required configuration.

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Available in Midwest

'Automed' Gives Medical Data

CLEVELAND – The Automed medical information service, pioneered in Sweden, is being offered to physicians and other users of medical data in the Midwest by Medical Data Systems.

Physicians will be able to obtain their patients' medical records by pressing a few keys on a CRT terminal. Each physician will only be able to access certain information from the service regarding his own patients.

He must identify himself by keying in his own code number before the information in the file becomes available. Individual patient records will be obtained by keying the name or social security number.

Information in the files is arranged in three different levels. The first level consists of emergency information such as name, address, telephone number, allergies and blood type, which can also be accessed by other authorized medical personnel such as private physicians, hospitals, and nursing homes.

Information on the second level can be obtained by other physicians only by authorization from the patient's own doctor.

Third level information can be accessed only by the patient's physician.

For the patient the computerized record keeping will eliminate repetitious personal information sessions each time he enters a hospital or clinic for treatment.

Besides the benefits of permanent patient record storage, the physician can also receive other benefits such as partially or totally automatic billing, based on standardized charges entered into the system. Statements covering patient accounts would be sent to the physician periodically.

The computer can also complete standard medical insurance forms used by Medicare, Blue Cross and Blue Shield and some of the leading insurance companies. It will also handle other accounting functions for the physician.

Automed has applications suitable for use by pharmacies, hospitals and medical laboratories, as well as drug manufacturers.

Initially, the service is being offered to some 60,000 physicians in Illinois, Ohio, Indiana, and Michigan. Later on, MDS plans to extend its services to the East and West Coasts.

The systems uses a Univac 494 computer, located in Olmsted Township in suburban Cleveland – connected to Univac Uniscope 100 terminals. The cost to the physician, including terminal, on-line storage, long-line phone charges where applicable, and access to software routines, will be $450/mo. The service will be available in June.

Time-Shared Udraft Language Adapted To Universal Drafting Machine Plotter

BEDFORD HEIGHTS, Ohio – A turnkey system including the Orthomat Graphic System 4000 Drawing Center and Udraft-8 software to prepare the tapes for the plotter is now available from Universal Drafting Machine Corp.

Based on the Udraft language developed earlier for time-sharing, Udraft-8 includes a text editor/syntax checker and a translator package. The editor aids in the preparation of manuscript tape, making changes as needed to correct typing and manuscript errors.

Corrected tapes, produced via a high speed punch, are used as input to the translator which generates a standard word addressed, EIA-coded tape suitable for use on the Orthomat plotter.

Using simple statements, combined with a Macro Library and alphanumeric capability, a draftsman without programming knowledge can produce complex drawings with a minimum of effort, UDMC said.

The Orthomat 4000 is based on a DEC PDP-8 with a 4K memory, which can be used for other processing when not being used for Udraft-8. The plotter provides a drafting area of 4 ft by 6 ft, with point resolution of .001 in.

The total hardware system including the PDP-8, high-speed paper tape reader/punch, Model 33 Teletype and plotter is priced at $70,000. The Udraft-8 software costs about $5,000, from 5200 Richmond Road, 44146.

'RAX' Handles All Types of Files For PDP-10 or T/S Network Users

BEDFORD, Mass. – Users with access to the First Data Corp. time-sharing network can save time and service charges by using RAX, an advanced handling routine for all kinds of DEC PDP-10 files, according to the developer, The Bedford Group.

RAX enables a user to read or write any number of words, starting with any word in a file.

Files written by RAX are said to be much smaller than corresponding files written by Fortran.

RAX is available on the First Data net for $2.50/day, regardless of how often the user accesses the routine.

First Data Corp. is at 400 Totten Pond Road, here, while the Bedford Group can be contacted through P.O. Box 352, Bedford, Mass. 01730.

Pi Sort 2 Used With IBM Sort

By Don Leavitt
CW Staff Writer

LOS ANGELES – If you can't beat IBM, join it.

Having done legal battle several years ago to stop the distribution of IBM's DOS Sort 483, Programmatics Inc. has now adapted its Pi Sort package so that it is now used with the IBM utility. The result is Pi Sort 2.

Pi Sort 2 is compatible with IBM's Sort 483, the firm said. It will accept the same control cards as the IBM sort so that the user does not have to change any of his procedures in order to use Pi Sort 2.

Pi Sort 2 does not have all the capabilities of the IBM Sort, however. If the user specifies a need to sort variable-length records, or to do a merge-only operation, Pi Sort 2 will actually fetch the IBM package to do the job. The switchover is transparent to the user.

The Programmatics sort is said to sort fixed-length records at least 30% faster than other sorts, with the degree of improvement based on the condition of the input file. Pi Sort 2 takes advantage of any inherent sequencing.

Pi Sort 2 can sort a file with one-half the disk work area required by Sort 483 or the newer Sort SM1, the company added. The Programmatics package is available for $100/mo, from 1661 San Vincente Blvd., 90049.

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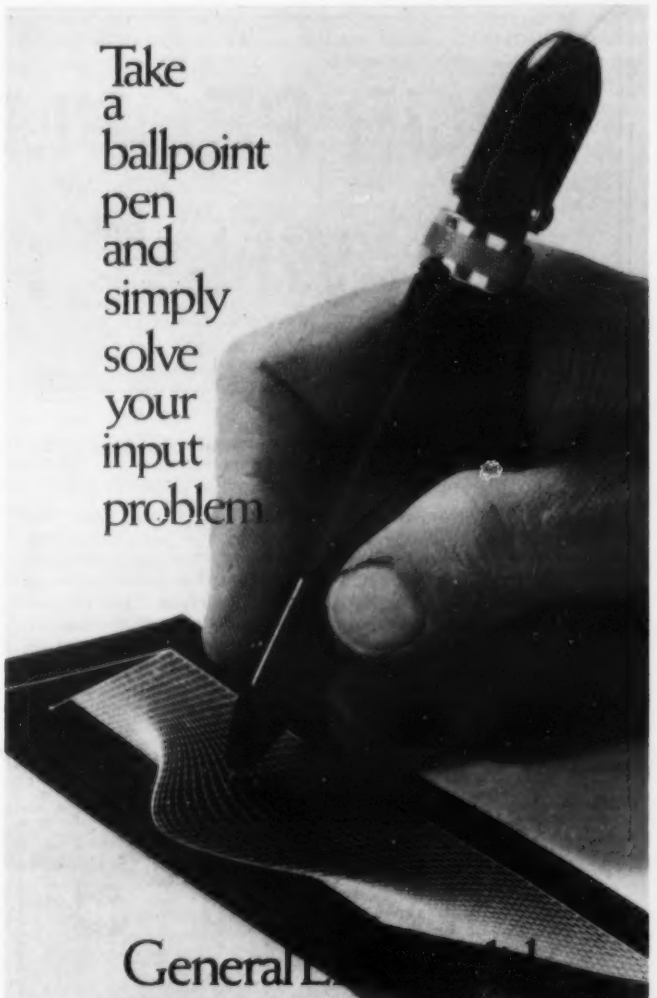

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Researchers at GE's Schenec[illegible] and Development Center wanted to test out some new interactive graphic techniques, but quickly and at low cost. So they connected a Graf/Pen system to their graphic terminal.

Graf/Pen is a ballpoint with a difference. It uses a tiny spark that sends sound signals to mylar strip microphones that record x and y coordinates. Because sound is used, data input is very simple. No software, no costly interfaces, none of the start-up problems often associated with graphic input.

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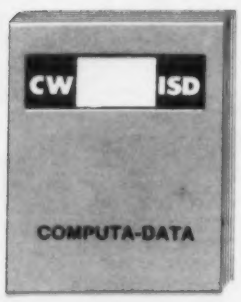
FOR PEOPLE WHO DON'T KNOW WHAT THEY'RE MISSING

Group I
New Products and Applications

The data offered in these Reports and Profiles describe new products being offered to and by the data processing industry. Included are applications for these products as well as new applications for existing products. Reports include names of suppliers; users who have developed new applications for products; new general developments in the field.

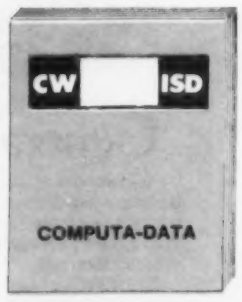


(Circle No. on coupon)

1 Computers & Minicomputers
2 Terminals
3 Software
4 Components
5 Supplies
6 Services

Group II
Installation Contracts

This Profile deals with the granting of data-processing contracts. Included are contracts for hardware, software, and peripherals. The information reported includes, whenever available, the names of the companies involved in the contract; a statement of the proposed work; the length of the contract, its proposed start-up date, etc. **(Circle No. 7)**



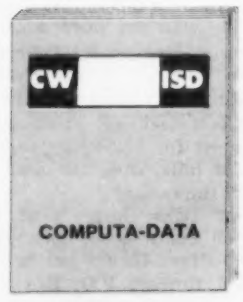
Group III
Industry News

(Circle No. on coupon)

8 Mergers & Acquisitions
9 New Companies & Services
10 Marketing Trends & Forecasts

Group IV
User-Markets: Developments and Applications

Data-processing developments and applications for specific markets and uses of available products (hardware, software, services, etc.) are highlighted in these Reports and Profiles. Included are data detailing how the product is used for specific jobs; its value to specific user-markets; users of the product; companies offering the product; availability of the product; components of packages for user-markets.



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11 Accounting
12 Banking
13 Insurance
14 Military
15 Communications
16 Medicine
17 Data Processing
18 Transportation/ Reservations
19 Financial
20 Information Transfer
21 Education
22 Law Enforcement
23 Legal
24 Government

Group V
Reports and Profiles for Specific Job Titles

These Reports and Profiles contain data of interest to people with specific responsibilities in the field of EDP. They deal with developments in data-processing which have a direct bearing on the type of work performed in these positions.

(Circle No. on coupon)

25 EDP Managers
26 Programmers
27 Systems Designers
28 Time-Sharing Managers
29 Librarians
30 Corporate Executives (including MIS data)

Group VI
Personalized Reports and Profiles

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Bits and Pieces

Data Acquisition System Programmed Using Basic

PALO ALTO, Calif. – A simplified modular data acquisition system from Varian, the 620-based Adapts provides real-time analog and digital processing and testing, and is programmed in Basic. The system is said to offer a high degree of flexibility with its unified I/O structures in both hardware and software.

All I/O operations are controlled by four Basic statements, regardless of whether the signal is analog or digital. Data acquisition rates range from 5 kHz to 50 kHz, with faster rates attainable under Assembly Language or Fortran control. Adapts will be available in June, in four basic configurations at prices starting at $33,940.

DEC Adds Controller and Scanner To RSX Data Acquisition System

MAYNARD, Mass. – A universal digital controller (UDC-15) and a flying capacitor scanner (AFC-15) are offered by DEC for use with its RSX-15 industrial data acquisition and control system that uses the PDP-15. The devices are intended to receive signals from a variety of industrial and laboratory instruments used in data acquisition, process control and testing.

As many as 11 UDC15s and AFC15s may be interfaced to the RSX-15. The UDC15 sells for $2,800 and the AFC15 for $5,000. Deliveries begin in May.

Microfilm Reader Handles Cartridges, 16mm Film Reels

SPRING VALLEY, N.Y. – Arcata Microfilm's Model 1114 roll and cartridge microfilm reader, in addition to 16mm reels, can accommodate 3M and Recordak cartridges by the use of snap-on adapters. The unit features a 24X optical/illumination system said to provide flat, even illumination and pin-point sharpness to the edges of the 11-1/2 in. by 14-1/4 in. screen, according to the company.

The unit features a pushbutton-reset odometer for frame location and an open film gate. It is available for immediate delivery at $620 from 700 S. Main St., 10977.

Unit Applies 9,000 Label/hr

WILLOUGHBY, Ohio – The TRP-2 "Appli-Matic" address labeler, from Fasson Machines Products, an automatic desk-top device, can apply computer-printed, pressure-sensitive labels to flat mailing pieces at rates to 9,000/hr. The machine, priced at $3,475, is able to handle pieces as large as 12-1/2 in. long by 13-1/2 in. wide. It is available on a two week delivery schedule from 4590 Industrial Parkway, 44094.

Large DP Wastebasket Has Casters

MINNEAPOLIS – Lightweight wastebaskets in sizes large enough to fill the needs of computer rooms from Kapko, Inc. are available with optional casters for easier handling. Available in the 25 lb., 55 gallon K240 and the 13 lb., 24 gallon K246, the baskets are available in red, white, or blue. The price of the K240 is $49.95, and the K246 is priced at $24.95. Casters add $19.95 to either model. They are available for immediate delivery from 5912 Wayzata Blvd.

Two Models Offered

Ampex Reduces 360 Core Memory Cost

By Frank Piasta
CW Staff Writer

REDWOOD CITY, Calif. – Two series of replacement memories for IBM 360s from Ampex Corp., the ARM-30 and ARM-2365, give the user still another opportunity to decrease the cost of his mainframe by lowering main memory costs 20%.

Available to users of the IBM 360/30 and 360 models using the 2365 memory, including the 65, 67 and 75, the Ampex core units are said to be completely hardware and software compatible with the IBM memories they replace.

Main core memory replacements units for the 360/30 have previously been announced by Fabritek, Information Control Corp., and Data Recall, sold through Computer Investors Group. Memory replacements for the 2365 are being offered by Cogar.

Cycle times of the Ampex memories equal those of the units they replace, with equal performance, Ampex said. Memory storage capacities also match those offered by IBM for the various computers.

The Ampex ARM-30, for the 360/30, has a cycle time of 1.5 μsec and is available in capacities of 16K, 32K and 49K bytes. Up to four ARM-2365 modules, with a total capacity of 1 Mbyte, may be used with an IBM 360/65 or 67. As many as eight ARM-2365 modules (2 Mbytes) may be used with a 360/75. Cycle time is 750 nsec.

Maintenance by IBM on the rest of the system is not affected by the addition of the Ampex memory, Ampex said. The standard IBM lease contract, the company explained, allows a user to attach foreign units to the leased systems as long as they have no detrimental effect on system performance. But IBM told CW it could bill the user for any damages or increased service time caused by such attachments. Ampex will supply maintenance for its memory units.

A single 16K-byte module of the ARM-30 leases for$805/mo, and sells for $32,000. Additional modules are proportionately less expensive since power supplies and test equipment are included in the first module. A 32K module is priced at $42,230, for example.

A single 256K-byte module of the ARM-2365 leases for $7,400/mo; purchase price is $308,600. Both Ampex memories can be upgraded in the field, Ampex said, and are available in 60 days.

Punched Card Use Grows Despite Alternatives

By Georg M. Herzfeld
Special to Computerworld

Despite daily pronouncements of card obsolescence, the industry is more likely to witness U.S. acceptance of the metric system before it sees a decline in the use of punched cards. Although there have been major attacks on the punched card, the use of cards continues to grow, especially as an output medium.

The main thrust against cards is really an alleged movement toward more efficient source document coding. Key-entry systems, mark sense readers, OCR and magnetic ink character reading (Micr) have been developed as methods to reduce some very real DP expenses.

Card output, in the form of turnaround documents, is gaining increased popularity. Computer punched documents allow convenient, inexpensive input without recourse to human handling and rekeying. OCR and Micr, of course, offer the same advantages. But offsetting disadvantages limit their use except in very specialized applications.

The reason for this is unfortunate and obvious – OCR and Micr are economically limited to reading simple preprinted forms or highly stylized fonts.

Despite painfully slow development and consistently overestimated volume, Mark Sense Reading seems to be on the verge of acceptance – especially when combined with computer punched output.

Increased use of punched cards is based on significant economic and human-oriented considerations. IBM has carefully avoided any product offering that is a direct replacement for card equipment. To the contrary, it has recently introduced three new card readers, two of which have mark sense capability. Univac also has introduced new card equipment. Far from dwindling, the number of cards used has increased each year. A decade ago, the rate was about 5% per year. Currently, the figure is in the 10% - 20% range. And, except in the large centralized in-house applications, cards will remain the most economical and flexible means of data coding.

As computer technology is required by more sections of business and industry, the card use will continue to grow. As long as people are invoiced by mail, there will be punched cards. Turnaround documents, particularly invoicing, currently represent the largest use of cards.

We see a more significant trend to punched card equipment being used as terminal devices.

The increased use, however, of remote input terminals will be accompanied – sometime, maybe "next year" – by remote output punches. This equipment, limited by transmission line speed, will buck the trend for faster card punches. Instead of the 100 to 300 card per minute requirements of satellite punches, the terminal equipment requirements will be, most likely, on the order of 30 to 60 cards per minute.

While it would please many individuals to agree that the card is dead, the opposite is true. Keyboard or other data entry systems may have some future impact on the keypunch, but only when IBM decrees it.

Georg Herzfeld is vice-president of Data Products, Denver, Colorado.

Microprogrammed Controller Adapts CRTs to Any Computer

GREAT NECK, N.Y. – Three models of a new line of CRT terminals from Sugarman Laboratories, Inc. are microprogrammable to enable them to be adapted to any computer.

Called the Series 4000, the units include the model 4200, a CRT replacement for teletypewriters; the 4300 which adds text editing capabilities; and the 4700 which has a graphics capability.

All models feature a controller which uses a preprogrammed computer with one or two Kwords of memory. The computer is used to mate the devices with such terminals as the IBM 2265 and IBM 2741. The processor, the company said, can be easily modified to adapt to another computer, in the field.

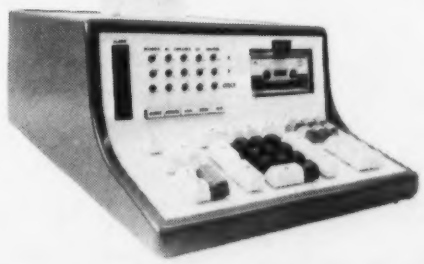
Text Scrolling Included

The three models each have a screen capacity of 20 lines of 80 characters. The 4200 includes editing capabilities such as character/line insert or delete. Text scrolling including roll up and down, tab stops, and format control are included. Upper case characters are shown as white on black while lower case characters are displayed black on white. The unit is priced at about $3,000.

The 4300 is a true upper/lower case device which incorporates all of the features of the 4200. It features direct cursor addressing and cursor position inquiry by the computer. The unit is expandable to text specifications or to those of the 4700. The price is about $3,400.

The 4700 incorporates all of the features of the 4300 and adds to it graphics capabilities. It can be used for dot or vector drawing. In the incremental mode it calculates line segments for curve tracing. The unit sells for about $4,200.

SMART DATA RECORDER



The Tranti Sorcerer source data collection system, or "smart" terminal, includes a keyboard, built-in calculator, program, paper tape printer, magnetic tape cassette recorder, and direct access modem for unattended computer polling. This portable instrument provides a unique, new and better method for off-line entry, processing, storage, and transmission of data at its source.

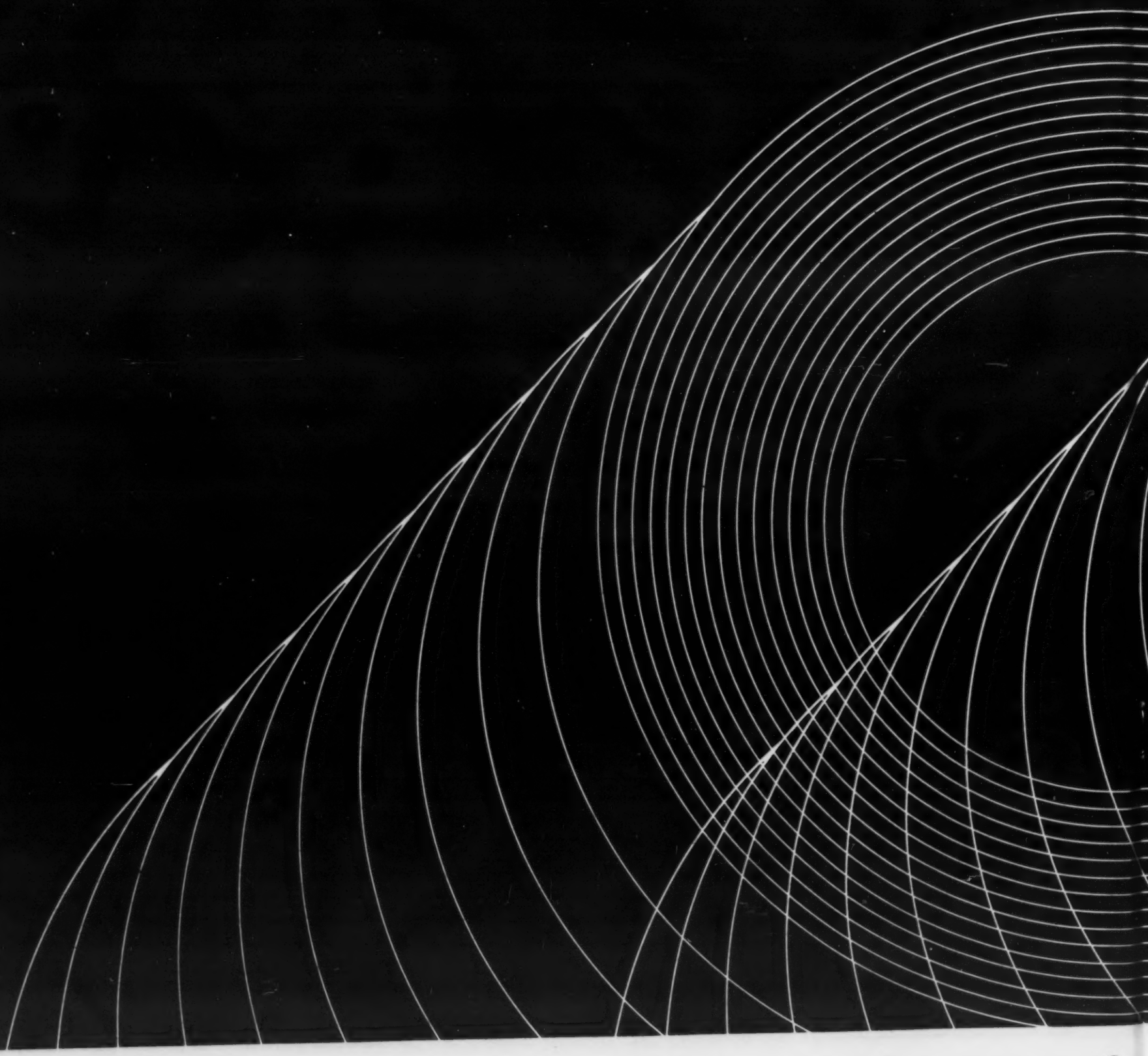
The Sorcerer is ideal for accounting, insurance collection, inventory control, fast food, and service bureau applications. Simply key account numbers and dollar entries – the recorder verified, accumulates totals, and stores on magnetic tape. Entries are listed by the printer, and error alarm features guide the operator. Data is automatically transmitted on call from the computer.

For full details, please call or write:

TRANTI SYSTEMS, INC.
540 Main Street
Tewksbury, Mass. 01876
Tel. (617) 851-4288

REPS WANTED: For Mid-West, New York, and South East.

Double the storage capacity
ISS 715



Now, Information Storage Systems, the leader in disk memory technology, brings you the ISS 715 Disk Drive. □ Conventional—in that it uses standard eleven-high disk packs interchangeably and has track capacity and data rate identical to the widely used ISS 714. □ Unique—because it doubles storage capacity to 58-million bytes by using 400 cylinders. At the same time, cost per byte is reduced significantly, access time is the fastest in the industry (29 ms average), and it trims space requirements. □ The ISS 715 is functionally engineered for practical integration into existing systems with a minimum of controller and programming changes. □ All this is part of our OEM program to keep systems manufacturers and their customers supplied with the most advanced products available, now and in the months and years ahead.

For complete information, call or write Information Storage Systems, Inc., 10435 North Tantau Avenue, Cupertino, Calif. 95014, (408) 257-6220

ISS

Trivex Terminal Priced 25% Below 2260

ORANGE, Calif. – The Trivex terminal system allows the IBM 360 or 370 user to reduce the cost of his 2260/2848 configuration by about 25%.

The Trivex 40/80, from Trivex Inc., can control as many as 32 terminals, four 15 char/sec printers and two magnetic tape cassette drives without software changes. The IBM system can control up to 24 terminals.

Terminals are available in four models displaying from 120 to 960 characters. The models duplicate the display capacities of the 2260 with the exception of the 120 character unit which is not offered by IBM.

The controller can be directly attached to the IBM selector, or multiplexer, channel directly to the CPU, or may be attached over a single telephone line via 1,200 to 9,600 bit/sec modem. The unit performs all local control functions and provides the basic logic, timing and memory for the displays.

The controller is said to incorporate as standard equipment all of the options available with the 2260/2848. In addition, other features, such as character insert/delete, and character repeat.

The terminals and peripherals can be attached up to 2,000 ft from the controller. Characters on the terminals are generated in a 5 by 7 dot matrix. The terminal can be ordered with a full alphanumeric, numeric-only or special keyboard.

The prices for the terminal start at $48/mo. Controller prices range from $400/mo to $800/mo, depending on configuration. To compare the price with the IBM system, Trivex said that a 40/80 system with 16, 960-character terminals would rent for $1,752/mo, while the equivalent IBM system would rent for $2,860. The systems are available on a 60-day schedule from 2201 N. Glassell St., 92667.

Tape Conditioner Uses Vacuum

SUDBURY, Mass. – By combining high vacuum and surface scraping, the low-cost MTCX magnetic tape conditioner from P.G. Foret, Inc. eliminates the use of cleaning tissues used on most competitive tape cleaners.

Dirt is "shaved" from both sides of the tape by carbide scrapers, and removed through a vacuum system, preventing contamination. Vacuum is also used to regulate the tension of the tape against the scraping surfaces.

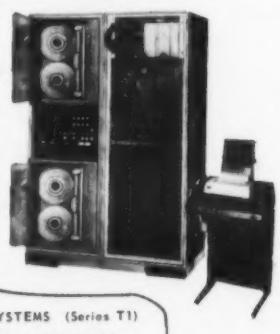
The tissue used by other tape cleaning devices, the company said, is eliminated along with any chance of recontamination of tape with dirt deposited on the tissue.

The basic price of the MTCX is $1,295 on a 30-day delivery from 60 Union Ave., 01776.

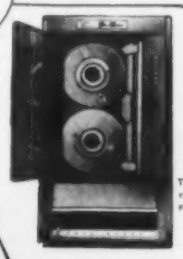
puzzled??

per data pieces fit!!

PRINTER SYSTEM (Series LP)
Low cost medium speed printer with controller.
300/600 LPM
80, 132 variable columns
64 character ASCII font
Sound deadening cabinet
Diagnostic and I/O software routines



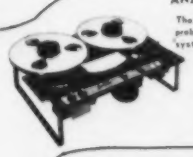
TAPE CONVERTER/TRANSLATOR (TCT) MEDIA SERIES
Turn-key system incorporates CPU, controller, transports punched tapereader and punch.
IBM compatible magnetic tape read/write
Paper or mylar punched tape
Complete tape-to-tape translation
Total verification of all generated tapes
Proven software support



MAGNETIC TAPE SYSTEMS (Series T1)
The Per Data industry compatible magnetic tape system consists of a tape controller and one to eight high performance low cost tape drives.
25 ips, 37.5 ips, 45 ips or 75 ips tape speed
200, 556, 800, 1600 BPI recording densities
7 or 9 Read after Write
7/9 Read Only
System Software includes diagnostic and I/O routines

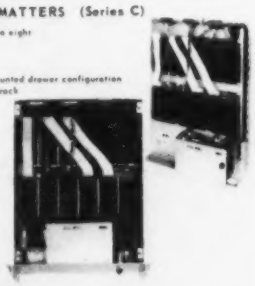
DISC SYSTEMS (Series D)
Low cost disc system composed of a disc controller and one to eight fixed head discs.
500,000 bits to 22,000,000 bit storage
8.5 ms access time
3600 RPM
Synchronous operation
Automatic transfer block oriented controller
Diagnostic and I/O software routines

ANALOG TAPE TRANSPORT (Series A)
The Per Data 800 is an inexpensive solution for OEM problems that have previously required expensive tape systems.
Variable speed from standstill to 120 in/sec
¼", ½", and 1" tape width
.01% accuracy at all speeds
Extremely low tape flutter (.05% PP at 1 7/8 ips per IRIG 106-695TD)
Phase Lock Loop Capstan Servo
DC Reel Servo

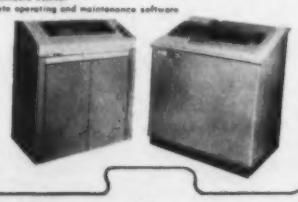


CARD READER SYSTEM (Series CR)
The Per Data Card System consisting of a heavy duty card reader and controller is designed to operate in remote terminal applications.
300/600/1000 cards per minute
STD 80 column EIA card
600/1000 card hopper
Diagnostic and I/O software
LED light source

TAPE CONTROLLERS/FORMATTERS (Series C)
Universal hardwired controller for one to eight tape drives.
Either 800 BPI or 1600 BPI
Combination 800/1600 BPI
Rear rack mountable or slide mounted drawer configuration
200/556/800 BPI, 7 track or 9 track



OFF-LINE TAPE TO PRINT STATION (Series MP)
The Per Data Tape to Print Station is a stand-alone system dedicated to off-line printing.
Reads 7/9 track tapes
800/1600 cpi densities
600 LPM print out
Manual operator's panel
Programmable control
Complete operating and maintenance software



REMOVABLE DISC SYSTEM (Series DP)
Low cost removable disc system is composed of a disc controller and one to eight removable head discs.
11,000,000 bit to 40,000,000 bit storage
75 ms access time
1500 RPM
Synchronous operation
Random block addressing
Diagnostic and I/O software routines

Contact The Sales Representative In Your Area

per data
Peripheral Data Machines, Inc.
102 New South Road
Hicksville, N.Y. 11801
(516) 938-2851 TWX 510/221-1881

New York City, Long Island (516) 935-6600
New England (except Conn.) (617) 444-2366
Philadelphia Area (215) 357-6645
Northern New Jersey (201) 654-3272
Connecticut, Upstate New York (914) 963-3802
Washington D.C. Area (301) 587-2523
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New Mexico, Texas (505) 256-3663
Utah, Idaho, Montana (801) 355-5327
Arizona (602) 967-0809
Encino, California (213) 981-0161
Santa Ana, California (714) 546-6803
La Jolla, California (714) 453-7042
Mountain View, California (415) 964-2942
Florida (305) 841-7760
Alabama, Tennessee, Mississippi (305) 534-9771
North Carolina, South Carolina, Georgia (919) 227-2581

Bits and Pieces

Mag Card Processor Gains Speed and Data Capacity

NEW YORK – An improved version of its magnetic card processor, the CPC-5500, which can read or write 1,024, eight-bit characters from an 80-column card in 620 msec, has been introduced by Computer Property Corp. The previous model had a capacity of 768 bytes. The reader is available with interface to the Data General Nova. Other mini interfaces are being developed.

Use of the read/write device allows updating capabilities which would otherwise require multiple magnetic tape units, the company said. Other uses include storing programs, subroutines, or tables, and off-line data preparation. The unit is priced at $5,000 and is available on a 60-day schedule from 7 Dey St., 10007.

PDP-10 High-Resolution CRT Displays Character, Vector Data

MAYNARD, Mass. – The VB10-C interactive CRT display system, added by DEC to its time-sharing PDP-10, can present character and vector data on its 21 in., 1,024 by 1,024 point screen. It can display 1,500 characters or 6,000 in. of short or long vectors, and features a light-pen, eight intensity levels, zoom logic, "graph-plotting" alphanumeric generator and independent axis-scaling.

The display attaches through the computer's I/O and memory bus connections. It uses graphic software available through the DEC users' group (Decus). Optional features include an X-Y tablet, keyboard and slave scopes. The basic unit is priced at $35,000 and is available on a five-month schedule.

System 22 Converts MCST Data; Card to Tape at 50 Char/Sec

BLADENSBURG, Md. – A device that converts data from Magnetic Card Selectric Typewriter (MCST) cards to IBM-compatible half-inch computer tapes, called the System 22, is available from Digi-Data Corp. All of the data, including control codes, from each card is transferred to the tape at 50 char/sec. The tabletop unit is $175/mo, or can be purchased for $4,000. It is available on a 60-day schedule from 4315 Baltimore Ave., 20710.

Wright Offers System/3 Catalog

WORCESTER, Mass. – Wright Line, a major supplier of DP accessories, has described its line of products for use with the 96-column card in a catalog entitled *System/3 Accessories.*

The products cover the gamut from card guides and filing trays to tub files and work stations. Sorter racks, carrying cases and trucks built to the new card's dimensions are included. Items designed to complement IBM System/3 hardware, such as desks for use with the IBM data recorder and matching supply cabinets, are illustrated.

The catalog is available from 160 Gold Star Blvd., 01606.

Videojet Buffer Speeds Output

CHICAGO – A serial buffered interface module for its Videojet 9600 ink-jet printer from A.B. Dick Co. provides asynchronous operation at speeds to 25 times faster than most receive-only teleprinters, according to the company. The standard buffer size is 200 characters and is expandable to 400. Options include parity line checking and multipoint line operation. The price of the printer with buffered interface is $7,730. First shipments are currently being made from 5700 W. Touhy Ave.

Firms Ask FCC to Reconsider DP Ruling

CW Washington Bureau

WASHINGTON, D.C. – A number of companies, including several affected common carriers, have petitioned the Federal Communications Commission for reconsideration of its recent ruling that companies which offer communications-related DP services to users should remain unregulated [CW, March 24].

Western Union Telegraph Co. asked the FCC to stay its final decision. WU said there is substantial likelihood that its petition will result in reconsideration and revision. Three commissioners, WU noted, did not find any valid justification for the prohibition against the purchase by carriers of DP services from affiliated companies. The FCC had ruled four to three.

International Telephone & Telegraph Corp., in its petition, said part of the commission's final decision "would require the elimination of the symbol 'ITT' from the name of either its communications subsidiary or its DP division. If either company were compelled to abandon the use of the symbol, it would be required to reestablish its image at considerable expense.

Meanwhile United Telephone System followed the lead of GTE Data Services and went to court, filing a notice of review with the U.S. Court of Appeals in St. Louis. The GTE unit had previously filed a similar petition with the U.S. Court of Appeals in New York, and industry sources indicated that all actions will probably be consolidated there.

Communications

WU Wins Hybrid Link Approval

WASHINGTON,D.C. – Western Union has been authorized by the FCC to build eight new microwave stations and modify three existing stations, including installation of terminal equipment, between Cincinnati, Ohio, and Atlanta, Ga.

The building will provide WU with a 'hybrid' digital and analog extension of its transcontinental microwave system. No new services are presently planned for the link, the company said.

The action will permit release of more expensive facilities now being leased from AT&T, provide for TWX trunk requirements, and meet normal communications channel growth requirements, according to WU.

Objections to the WU proposals by Microwave Communications Inc. (MCI) and an MCI subsidiary were denied by the commission. MCI claimed WU had not adequately shown a need for the change.

MIS Files as Carrier For Shared Channel

WASHINGTON, D.C. – Management Information Systems Inc. (MIS) has filed a tariff with the FCC for a shared-use leased channel between California and Hawaii.

The filing, apparently made at the suggestion of the FCC Common Carrier Bureau, caused an immediate reaction from Western Union. WU charged that since the filing was made without any attempt by the MIS to become certified as a carrier under Section 214 of the Communications Act, the plan is illegal.

WU also claimed that MIS is violating Bell System tariff provisions related to shared use.

In the proposed tariff, MIS said it would do the billing, including a 'service fee' in addition to line and multiplexer charges.

Data Briefs

Canadian Task Force Seeks Carrier-Computer Comments

OTTAWA, Ontario – Interested parties have until May 31 to submit comments regarding the relationship of communications common carriers and DP services to the Canadian task force attempting to develop a formal government policy.

Meanwhile, Instant World, a new report of the Canadian government's Telecommission, has suggested the need to establish an agency to oversee the communications industry, including carriers and computer services.

Copies of the report are available for $3 from Information Canada, here.

IXI Adds 1,800 bit/sec Modem

MINNEAPOLIS, Minn. – A 202 type data set, with operational characteristics capable of being altered to meet specific requirements, is available from Information Exchange Systems, Inc. (IXI).

The Bell-compatible unit, employing FSK, can transmit in either half- or full-duplex mode at speeds up to 1,800 bit/sec.

Options include a variety of transmission and terminal equipment interfaces. It is priced at $400 to $600 from 3312 Gorham Ave. 55426.

IT&T Control Replaces IBM 2701

EAST RUTHERFORD, N.J. – Users operating IBM 2260 CRT terminals or comparable units in remote mode can save money by replacing IBM 2701 control units with 3127 Data Adapters, according to ITT Data Equipment and Systems Division.

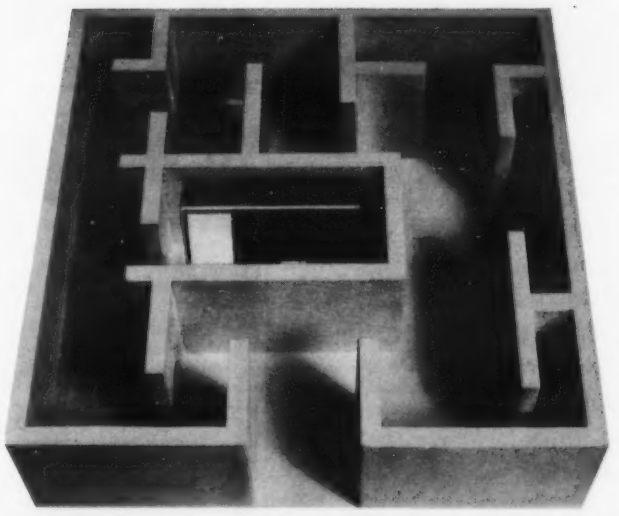
The 3127 simultaneously handles four display control lines operating synchronously from 1,200 bit/sec to 9,600 bit/sec, or asynchronously at 600 or 1,200 bit/sec, the company said. The Data Adapter, with four line terminations, leases for $44/mo including maintenance, from East Union Ave., 07073.

Analog Data Posted to TTY

HOUSTON – Data Graphics Corp.'s DGC-308 coupler is designed to monitor analog signals generated by one or more measuring instruments, display the signals digitally and record data on a teletypewriter.

The unit includes all circuitry for analog-to-digital conversion, data control and formatting, the company said, and the teletypewriter may be a remote computer terminal or an off-line recorder. Prices for the DGC-308 start at $1,300 from 8402 Speedway Drive, 78230.

The data modem maze. How UBC leads you through it safely.



With over 200 companies manufacturing data modems, how do you choose the right one?

UBC can lead you through this maze safely.

Our skilled applications engineers evaluate your data transmission needs. Then a proposal is prepared. In this proposal, we'll answer all your questions – solve your data transmission problems – before-the-fact.

We'll tell you which of the data modems manufactured by our subsidiary company, Rixon Electronics, best fits your requirements.

And we have a wide choice available. Thoroughly proven, low maintenance, quality data modems ranging from 1800 to 9600 bps. Modems with features such as built-in diagnostics that enable even non-technical people to isolate and correct a transmission problem in minutes.

OEM quantities or single, stand alone units, we usually fill your order from stock. However – when necessary – we can engineer our modems to your configuration and specifications.

Once your order is booked, our strategically located network of sales and service offices takes over.

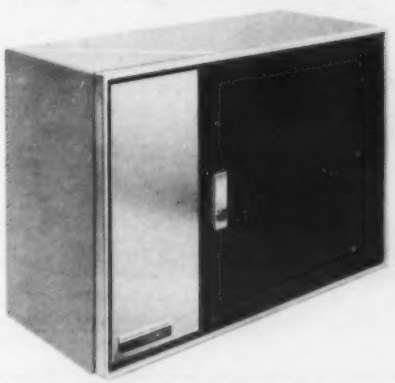
Our own engineers, installation and service people stay with you every step of the way. We consider training, trouble-shooting, testing and maintenance part of the sale.

Consider one more thing. We're not *just* data people. Our parent, United Utilities, Incorporated, operates the nation's third largest telephone system. So, we do know quite a bit about telephone lines. And this is often the key to effective modem utilization.

If all this doesn't convince you that UBC offers more than the ordinary, garden-variety data modem manufacturer, write and we'll tell you more. We'll also send your our *free telephone line conditioning guide*, a handy tool whether you buy from us or not.

Write: General Sales Manager
UBC, Dept. C-9-5
6405 Metcalf, Shawnee Mission, Kansas 66202.
Telephone (913) 362-5300.

To pick the right data modem, pick the right modem company.



United Business Communications

Subsidiary of United Utilities, Incorporated

C-9-5

Sales and service offices in: Atlanta / Burlington, Mass. (Boston) / Chicago / Dallas / Kansas City / Los Angeles / New Haven, Conn. (New York) / Pittsburgh / Silver Spring, Md.

On Social Issues

CPP Will Hold Forum at SJCC

By Edward J. Bride
CW Staff Writer

ATLANTIC CITY, N.J. – Computer People for Peace (CPP) appears to have made its point, and there will be extra sessions for social issues at the Spring Joint Computer Conference here, May 18-20.

The American Federation of Information Processing Societies (Afips), sponsor of the conferences, announced CPP would be given one of the two "science theaters" in the old part of the Convention Hall, to conduct an open "forum for concerned citizens."

CPP had been offered a room in a hotel, but declined in favor of being close to the commercial exhibits. Afips also said it would attempt to set up chairs and public address equipment in a "theater-in-the-round" fashion so, as CPP had requested, the atmosphere would be more "intimate."

Afips will hand out to all conference registrants a schedule of the CPP agenda; the topics and times are expected to be, chiefly, the following five:

- Data banks: "The Right to be Un-listed" (Tuesday p.m.)
- Health systems (Wednesday a.m.)
- Computers and the military (Wednesday p.m.)
- Minority groups and women in the computer industry (Thursday a.m.)
- Unemployment and the right to work (Thursday p.m.)

Guarded, Then Pleased

Early reaction from CPP was guarded, then CPP individuals and spokesmen seemed pleased that their requests had been met.

Afips noted that all attendees would need the usual conference identification badges to walk through the exhibit hall to get to the meeting rooms. While full (paid) and student registrants are normally the only persons allowed into technical sessions, Afips said it had not considered whether to allow exhibitor guests into the "open forum."

The science theater will be available to CPP for "essentially the entire conference," a source at Afips related, beginning with Tuesday afternoon.

CPP has been continually critical of management-oriented conferences which "ignore" social implications of computers, and has interrupted or picketed previous joint computer conferences in Boston and Atlantic City.

ABFM Cancels Meeting

WASHINGTON, D.C. – The Association of Business Forms Manufacturers has cancelled its 1971 annual meeting scheduled for this week in Miami.

Reason for the cancellation, according to John R. deMasi, executive director, is that ABFM is in the process of merging with the Printing Industries of America's Business Forms Division.

COMPUTERWORLD

societies/user groups

'Week' to Honor DPMA

BUFFALO, N.Y. – Several local groups have combined efforts for a full week of informing the public about computers, calling their efforts the Niagara Frontier Computer Week.

Committees from the local chapter of DPMA, the Association for Systems Management and the Students Cybernetic Laboratory will conduct the events, consisting of movies, a student exposition, dinner meetings and the crowning of "Miss Data Processing."

All activities will take place next week, and are intended to commemorate the 20th anniversary of the Data Processing Management Association.

Included in the activities will be guided tours of DP centers, a management seminar and the concluding event, the International DPMA Directors Meeting on Saturday, May 15.

Most of the events will be open for free admission to the general public, except for the business activities of DPMA.

Call for Papers

SECOND ANNUAL CANADIAN COMPUTER SHOW, SEPT. 15-17, TORONTO.

The purpose of the competition is to encourage original uses or developments by Canadians in the computer field. Papers should describe original concepts in the DP art in Canada. Topics include: standardization in DP applications, data base analysis and design, relations among different groups of professionals, management of DP, critical review of the state of the art, training and planning for future needs and technical topics of importance to the computer field.

Authors must be residents of Canada, but persons working outside the country temporarily are also eligible. Persons wishing to enter must submit an "application for participation" form, and a preliminary abstract of the paper. Deadline for the application form is June 30, 1971. Three copies of the completed paper are required by July 31, 1971.

For further details contact: Canadian Computer Show, Paper Competition Chairman, P.O. Box 343, Toronto Dominion Centre, Toronto, 111, Ontario.

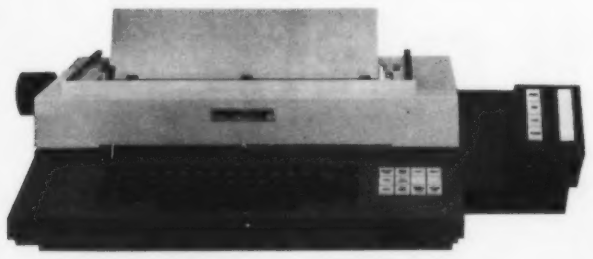
SECOND ANNUAL SYMPOSIUM OF THE ACM SIGCOSIM, OCT. 25, 1971, WASHINGTON, D.C.

Papers are invited for presentation at the Special Interest Group on Computer Systems Installation Management Symposium entitled "Economic Considerations in Managing the Computer Installation."

Specific topics include: economic impact of multivendor environment, charging policies for computer services, cost/effectiveness of facilities management, economics of scale (centralization vs. decentralization).

Abstracts of less than 250 words should be submitted to the program chairman by May 17, 1971. Deadline for receiving five copies of the final draft is July 19, 1971.

For further information contact: I. Feldman, Wiley Systems, Inc., 6400 Goldsboro Rd., Bethesda, Md. 20034.



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University, Institute Agree to Credit Transfer

MINNEAPOLIS – A joint venture between the University of Minnesota and Control Data Institute will attempt to meet the need for well-trained computer industry personnel with a broad-based educational background as well as technological expertise.

The program allows students at Control Data Institute here to receive credit from the university's General College toward either the Associate in Arts or Bachelor's Degree from the university.

Such graduates of the combined program can thus receive both a Control Data Institute certificate for study in computer technology, programming technology or digital computer operations (the courses' length varies up to a year with day or night study) – and a University of Minnesota degree based upon a program of general education.

Education

"Students meeting the entrance requirements for the university and Control Data Institute may apply for acceptance in this unique cooperative program, and study can commence at either the university or the institute," CDC President and Board Chairman William C. Norris said.

A maximum of 45 credit hours may be directed toward the Associate Degree and 90 credit hours toward the Bachelor's Degree.

Control Data has developed a network of 27 owned and licensed institutes throughout the country, offering computer career training, tuition financing and placement assistance.

The institutes teach students to analyze digital computer circuitry through electronic testing routines; to operate and program a medium-size computer for maintenance purposes; and to adapt their knowledge of computer concepts to other computers.

A significant portion of the course is centered around the students' actual performance of maintenance and troubleshooting techniques on a digital computer and peripherals. All equipment is located at the institute.

CDC says its cooperative program with the university represents a unique pattern of career training. For the first time, it says, a major university and a corporation have combined resources in an effort to integrate academic and practical education.

"Occupational surveys reveal government's and industry's growing need for technicians and specialists," Dean Alfred Vaughan of the university's General College said. "Technical/vocational programs are difficult to establish, qualified instructors are hard to find, equipment is costly, and colleges and universities working independently are hard pressed to keep pace with the rate of change in the computer field. Cooperative programs such as this between the university and Control Data Institute are pioneering efforts to coordinate and utilize rather than duplicate wastefully the resources of post high school career education," Vaughan added.

A similar program between Elkins Institute and Southern Methodist University enables the trade school students to receive up to 30 credit hours toward a degree in computer science or business administration from SMU [CW, April 28].

After a year of study to qualify as systems technicians or programmers, the students can continue through the college level and work in the DP field, or after satisfactorily completing six months of study at Elkins, enter the job market as a programmer.

The Minnesota-CDI set up would seem to stress the need for a general education for employment in the technical professions, whereas the Elkins-SMU arrangement focuses on computer science or business administration specialization.

Vocational School To Access 360/65 At Firm's Center

LANCASTER, S.C. – Students at the Lancaster Vocational School will have an opportunity to learn programming, as well as keypunching, as a result of a cooperative venture between the school and the computer information services group of Springs Mills, Inc.

The school recently acquired a Data 100 Model 70 remote batch terminal which will enable students to access the IBM 360/65 operated by Springs Mills.

Students taking the 180-hour programming course will receive training ranging from problem analysis to program writing and evaluation.

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CI Notes

Trustee to Run Viatron

BOSTON – There will be a court-appointed trustee running Viatron, now that a federal judge here has granted an SEC petition that the terminal maker be removed from Chapter 11 of the Bankruptcy Act to the more stringent Chapter 10.

Viatron filed for Chapter 11 last February, and continued to be operated by its own officers.

One of the likely actions of the new trustee will be a thorough examination of Viatron's financial dealings. The SEC had argued that the loss of over $30 million of public investor's money needed some looking into.

Raytheon Sells Memories

LEXINGTON, Mass. – Raytheon Co. will sell its memory and module product lines to Data Technology Corp. The product lines include analog instruments, analog and digital logic modules and Biax memories. The value of the proposed transaction was not disclosed.

Raytheon also announced the decision to transfer its Raytheon 700 Series digital computer line and its line of computer peripheral equipment to the Norwood, Mass., headquarters of Raytheon Data Systems Co., from Santa Ana, Calif.

Incoterm Signs $15 Million Pact

MARLBOROUGH, Mass. – Incoterm has signed an agreement with the Transac Division of CIT-Alcatel, a CGE company, involving a minimum of $15 million in Common Market sales of Incoterm products over the next four years.

The agreement calls for the completion by late 1971 of a French manufacturing facility for the licensed production by Transac of Incoterm computer terminals.

Supershorts

Cogar Corp. will reportedly supply the semiconductor memories for the new International Computers Ltd. 1904S computers. The firm was identified as the supplier in ICL press material released in Germany, but, in keeping with a policy of not commenting on its OEM customer base, Cogar would not confirm the report.

– – –

IBM will announce another "new-old" machine in the tradition of the 360/22 soon. Most industry sources indicate that the "new" 360/26 will be a stripped 360/40.

– – –

SCI-TEK, Inc. has acquired Univac's Information System Division metropolitan New York Service Bureau. The acquisition, valued in excess of $5 million, includes a Univac 1108 computer installation and service bureau in Mineola, Long Island.

– – –

Europe's first Sigma 9 is to be installed by a London-based time-sharing bureau CRC Information Systems Ltd., which has progressed to the $1,715,000 giant from its first machine, an IBM 1130, via a Sigma 5 in five years. CRCIS holds about 1% of the UK time-sharing market and is looking to the Sigma 9 to boost its share to 4%.

DP Study Looks to 1980

Hospital Market to Reach $1 Billion

NEW YORK – Hospitals in the U.S. will spend almost $1 billion on hardware and software in 1980, up from total expenditures of $160 million in 1970, according to projections prepared by Frost and Sullivan.

Hardware sales to hospitals presently amount to $70 million and will rise to $450 million in 1980, the report states, while software sales will rise from a base of $90 million to $530 million in the same period.

The largest share of the hardware/software market is private hospitals, Frost and Sullivan said, but "university and government hospitals will be the leaders in expanding their automated information systems.

"Those who are successful in selling hardware and software to meet their needs will be in a preferred position to capture a large share of the private hospital market as it grows during the 1970s."

Hospitals currently account for about 40% of the $70 billion spent annually for health care, the report claims. The annual expenditure for health services is expected to rise to over $80 billion by 1980.

The developing market "is almost totally dependent upon the availability of adequate computer programs," according to the report. Total hospital expenditures for software, it states, will grow at increasing rates starting with 15% this year and reaching nearly 24% by 1979, for an overall average of approximately 17%.

Government Hospitals

The hospitals operated by the Federal Government account for around 30% of the software expenditures in 1970, even though they comprise only 6% of the hospitals of the country.

University hospitals accounted for 35% of the 1970 software market, followed by state hospitals, 20%, the report states.

Various groups of hospitals sharing computer systems or facilities spent $20 million on software development during the past year and are expected to account for $50 million in 1975 and exceed $100 million by 1980, according to the Frost and Sullivan study.

For hardware the government-operated hospitals will spend around $56 million in 1975 and $112 million by 1980, according to the projections. Sales to state facilities will be about $33 million in 1975 and $57 million in 1980.

The university-affiliated hospitals will spend about $63 million in 1975 and $135 million by the end of the decade. Private hospitals, many of which are associated with the universities and are counted twice, will show about the same growth, also spending about $135 for hardware by 1980.

Regional networks or shared computer systems will be the fastest growing segment in terms of hardware, jumping from $14 million in 1970 to $44 million in 1975 and $90 million by the end of the decade, the report indicates.

The report notes that at present "the high cost" of display equipment is limiting its use, but predicts that if the price drops a tremendous market will develop for the units. A display market of between 40,000 to 60,000 units during the next 10 years is estimated.

Emergence of Remote Processing Expected to Spur Use of CRTs

LOS ALTOS, Calif. – The emergence of remote processing will spur the use of CRT terminals and increase the installed base by over 380% in the next five years, Creative Strategies Inc. predicts.

In a recent study of the CRT market, the firm expects the value of installed terminals to increase from $285 million in 1969 to almost $1.1 billion by 1975.

CRTs used as teletypewriter replacements will account for $120 million of the installed base in 1975, up from the present $4 million. The enhanced editing terminals market will be worth $370 million and multistation units will be valued at $475 million by then, up from $65 million and $190 million respectively.

Presently there is $6 million worth of low priced graphic units installed, and this is expected to grow to $55 million in five years. The value of high-priced graphic units will triple during the period from the present $20 million to around $60 million, the firm predicts.

The financial and brokerage market presently has the largest installed base of CRTs, valued at $91 million. That market is relatively saturated and will grow by only 58% to $142 million by 1975, the study shows.

Reservations Growth Potential

The fastest growing area will be hotel, auto and other reservation applications, which will show an increase from $1.2 million to $60 million in installed value over the same period.

The time-sharing industry will grow from $7.5 million to $126 million, showing the largest dollar growth in terms of installed base.

The airline reservations industry presently uses terminals valued at $48 million, and will increase its share to $125 million by 1975, while the insurance industry will show an increase from $36 million to $104 million.

The keypunch replacement market now accounts for $2 million of CRTs and will increase to $48 million. Military and government uses will increase from $15 million to $84 million during the same period.

Overall, interactive CRTs fit into a remote terminal industry that was estimated at $650 million in 1969 and which will grow at a compound annual rate of around 37%, according to the Creative Strategy projections.

The firm further states that at present 32% of the computers installed are capable of some remote processing.

More than 50% of the installed systems will have remote capability by 1975, the report notes. Memory capacities of large computer systems will be expanded to the point where large centralized data bases will be practical over a wide range of applications by that time, it concludes.

Trade Show Crystal Ball Appears Hazy

By E. Drake Lundell Jr.
CW Computer Industry Editor

Regional trade shows – either specifically for the computer industry or cutting across industry lines – have been drawing more and more computer industry exhibitors and three recent shows indicate that the results can go from good through indifferent to bad.

The shows seem to pop up in the early spring – possibly in preparation for larger trade shows later – and the computer firms in attendance use them as warmups for the salesmen that will have to man the booths at the Spring Joint in Atlantic City.

The smash hit of the early season was the 24th Annual Southern California Business Show in Los Angeles, which drew a crowd of more than 10,000, according to CW's West Coast Bureau.

The vast Florida Industries Exhibition in Orlando was either good or bad for the few computer firms present, depending on their product lines.

The only all-computer show of the spring training season was the Southern Computer Conference in Atlanta, Ga. Although drawing fewer attendees than had been anticipated, those that came were termed "good" contacts by the exhibitors. However, the quality didn't make up for the lack of quantity for many.

On the Road

At the Florida show, which included exhibits from all types of firms located in the state, the time-sharing houses called the exhibit well worth the effort. Computime said it was talking to potential customers among the other exhibitors as well as the attendees.

On the other hand, one large terminal maker said the show was slow and he wasn't seeing many buyers.

The real surprise was the Los Angeles meeting, especially since Southern California is one of the areas hardest hit by the recession. The show picked up nine new DP exhibitors, with a trend being toward peripheral and communications gear.

Enthusiastic Mood

The mood was enthusiastic, especially when compared to all of the "gloom and doom" talk of recent months. Exhibitors were selling off the floor, lead by the sale by Business Machines & Computers (which recently bought 38% of Clary Datacomp), of two systems at the exhibit.

Spring training is winding down and the bid show season will get underway in two weeks with the SJCC. Initial indications are cloudy, with a few rays of sunshine. Results for the three practice sessions can be read any way the particular viewer chooses.

Honeywell Wins Air Force Pact

CW Washington Bureau

WASHINGTON, D.C. – The Air Force has awarded a $17,387,521 firm fixed-price contract to Honeywell Inc.'s Aerospace and Defense Group, W. Covina, Calif., after the General Accounting Office disallowed a protest filed by General Precision's Link Division and General Electric Co.'s Daytona Beach, Fla., operation.

The award, for the ground simulator portion of the Undergraduate Navigator Training System (Unts), includes 24 minicomputers and 46 ground simulators. Purpose of the program is to modernize and increase the capability of the air training command in training basic navigator students.

The Air Force has not decided which minis will be selected, a Honeywell spokesman noted. But it is expected to choose from the manufacturer's 516 or 316 series.

Honeywell, in receiving the award – which includes an initial first-year obligation of $2,300,637 by the Air Force – competed with Conductron Inc., St. Charles, Mo.; GE; LTV Electrosystems Inc., Greenville, Texas; and Link. Requests for proposals were issued a year ago.

The protest to GAO alleged that all contractors were not judged by the same standards and that the proposed lower bidder was "buying in."

Injunctions Prevent Two Companies From Publishing, Selling Copied IDC Data

NEWTONVILLE, Mass. – Let the buyer beware – when it comes to lists of computer installations, at least. An unwary market research department might find itself the receiver of stolen goods.

The International Data Corp. (IDC) has obtained a permanent injunction against Infomart, Inc. of Los Angeles, and a preliminary injunction against KLH Associates of San Francisco, forbidding each firm from publishing or selling proprietary information copied from IDC's Domestic Computer Installation File.

The injunctions in each case apply to copies of the same IDC data which was the basis of the sole publication of Infomart and of a recent publication by KLH. The Infomart publication was advertised as "EDP Pro File" and the KLH publication was entitled "Computers 70 of New York City." The injunction applies only to publications derived from the IDC data, however, not to directories previously published by KLH.

The file is a principal product of IDC, which also sells market research services and is the parent corporation of *Computerworld*.

On Feb. 26 a permanent injunction was entered in the U.S. District Court for central California, forbidding further sales of "EDP Pro File" and ordering Infomart to turn over to IDC all sales proceeds from the directory. Evidence in the action established that the directory was a transcript of the IDC installation file that Infomart had improperly obtained from a former employee of an IDC customer.

In a separate state court action filed Jan. 7, IDC alleged that KLH was conspiring to sell portions of the IDC file as its own product, and that KLH was guilty of unfair advertising practices by claiming it had compiled and owned the information contained in such directory.

The court granted a temporary restraining order on the same day, prohibiting KLH from selling any portion of the IDC file, and from misrepresenting authorship of the New York directory.

Allegations Denied

In its answer KLH denied the allegations of IDC and alleged that IDC had used illegal searches to obtain evidence against KLH.

KLH also filed a cross complaint accusing IDC of monopolizing computer installation data and claimed punitive damages of $1 million.

On Feb. 19 the temporary restraining order was superseded by a preliminary injunction.

In the meantime, KLH attempted to copyright the New York directory, and on March 5 KLH was specifically enjoined from attempting to obtain any copyright on the New York census. The San Francisco firm was also ordered to withdraw and cancel any pending application for copyright on the directory, and to correct misleading statements made to the Register of Copyrights, with respect to authorship of the directory.

According to J. Thomas Franklin, IDC attorney and director, the IDC information originally obtained by Infomart was supplied to KLH as pursuant to a joint venture agreement between the two organizations. Depositions of the officers of Infomart and KLH have elicited testimony that the information in the KLH New York directory was obtained from Infomart, Franklin said.

Not Be Published

The Infomart parties also said that they gave the information to KLH on the understanding that KLH would not publish it.

Contacted by phone in San Francisco, Bruce Schrutt, a principal in KLH Associates, refused to confirm or deny Franklin's statements and referred CW to his attorney, John Droeger, who was said to be the author of a KLH press release on the litigation, and who was unavailable for comment.

KLH has appealed the grant of the preliminary injunction prohibiting further sales of the New York directory but has declined to post a bond necessary to stay enforcement of the injunction.

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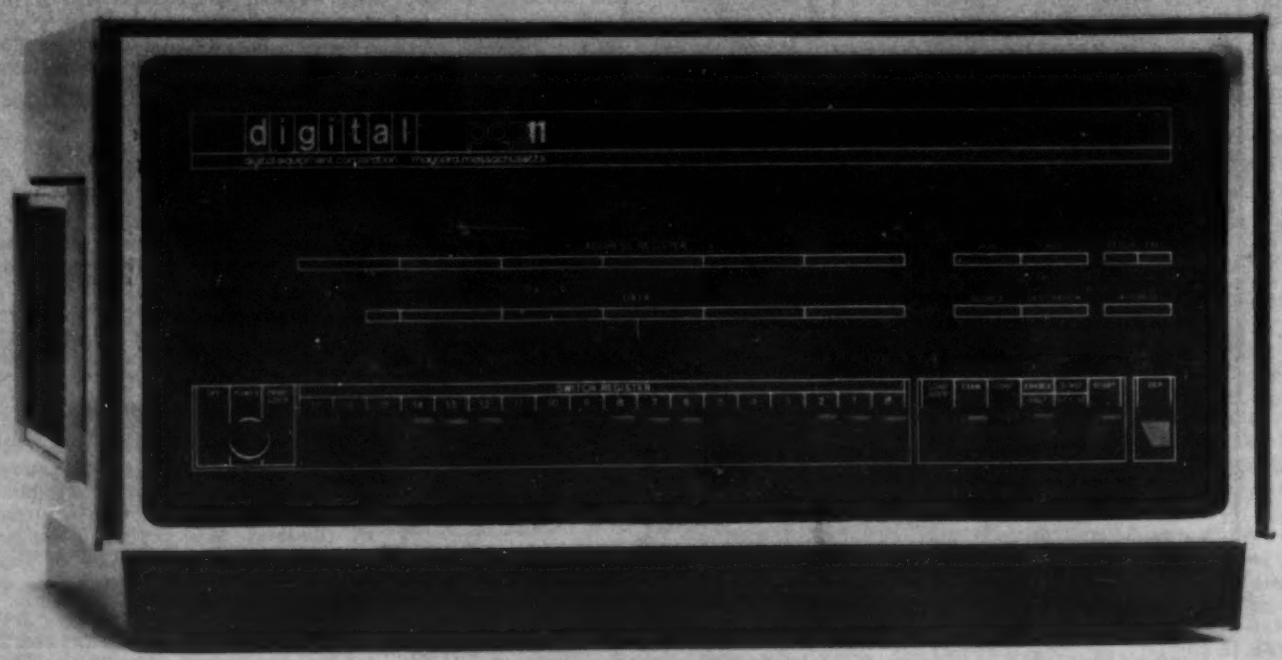
Now it comes in a rugged version. The PDP-11R20. With vibration, shock, temperature, and power-line specs that make it the toughest machine in the industry. And at a price that lets it fit commercial applications without a strain on the pocketbook.

All this has happened since January. But it's just a beginning. More PDP-11's are coming. Watch for the next additions to the growing PDP-11 family. Digital Equipment Corporation, 146 Main Street, Maynard, Massachusetts 01754, (617) 897-5111.



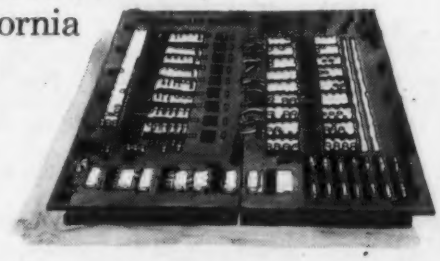
digital

Electronic Memories discreetly suggests a very low cost system for expansion modules or smaller main frame memories and that may even replace some disc memories: Micromemory 4000.

We recommend you read carefully. Because there's been a lot of wishful talk about a product like this one. The big difference is that we actually have it. We're talking about a 32K x 18 bits card type memory with control logic that allows it to be operated as 65K by up to 9 bits. Cycle time is 1.5 usec and access time is 800 nsec. And, starting April, we can deliver this memory off-the-shelf. By that we mean within days from receipt of order. Not weeks or months. And we don't want to talk price in this message; but we will say that the cost will cause many computer manufacturers to review their "make-or-buy" decisions. If you've been searching for a truly low-cost main frame memory or reliable expansion modules, we can assure you that this new family of "Micromemories" will open up a whole new area of system thinking. With regard to disc memories. With regard to claims you have seen or heard about semiconductor memories. With regard to other claims about low-cost core memory systems. If you have system responsibility, you really owe it to yourself to get the full details on our "Micromemory" family.

Here and Now. This ad is just a few weeks premature. The design is fully proved and tested. The prototypes are in existence. But our claim to production quantities will have to wait until April.

EM Electronic Memories is a division of Electronic Memories & Magnetics Corporation, 12621 Chadron Avenue, Hawthorne, California 90250. Telephone (213) 644-9881.



("Just one little 'new-and-sensational' wouldn't hurt.")

DP Stocks No Longer On the Top

By Michael Merritt
CW Staff Writer

It is now open season on guessing what – if anything – that mess up there means.

Prize for the best entry will be one share of Viatron. Second prize will be two shares of Viatron.

So while you sit reading everyone's predictions of when the Dow is going to break 1,000, you can have a little puzzle to divert you from thoughts of the poor farm.

Financial

Within a month of the inception of CW's computer stock index the rise began, and by the summer of 1968 the index had grown over 50%. And it stayed at a high level for quite a while, declining slowly through 1969, and not crashing down until the disasters of 1970.

But, strangely, the glamorous computer stocks were not as fantastically glamorous as they may have seemed. The American index equalled the performance of the DP shares by November 1968, and was a better performer throughout almost all of 1969. The Dow, of course, was relatively sluggish through 1968 and 1969, only once reaching a 15% difference from the March base price.

The computer section of the stock market was weak all during 1969, we can now see, losing almost a third of its peak value at one time. A slight rally in the fall brought the index back up, and computer stocks began 1970 20% above the base price.

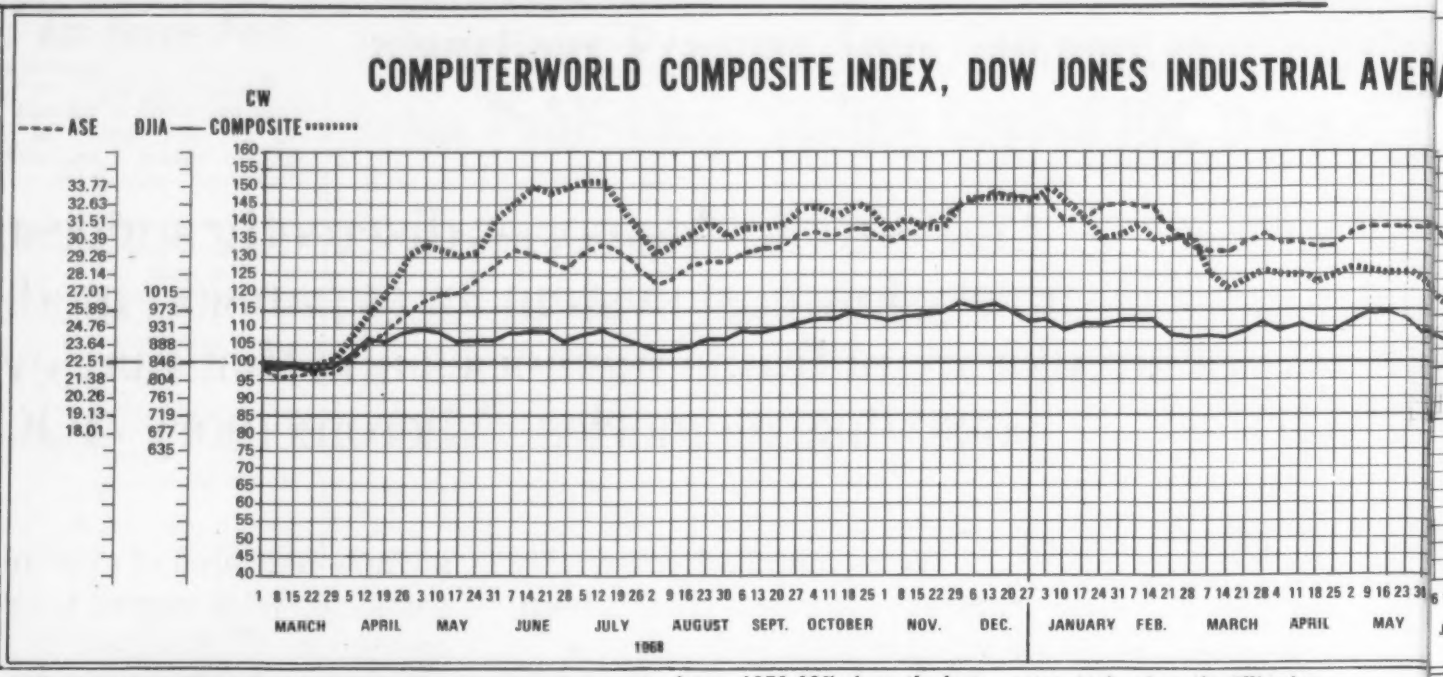
Then the fall began. Week after week, with few respites, prices fell. By the time the American index began showing the effects of the recession in April, the computer stock index had already dropped 30 points.

And when the crunch hit the exchange indexes, the computer stocks reacted like Russia invaded by the Teuton hordes. Between the middle of April and the middle of August the CW index dropped over 40% of the base, reaching a low of about 45. In the same period the American Index dropped 15% and the Dow about 10%.

Since the deflation of computer stock prices, the CW index has followed the trend of the Dow and Amex, but that's all. From the beginning of the year to the end of March the CW Index went up 15%, the Amex 15%, and the Dow slightly more than 10%.

The computer stocks are following the general improvement of the market, reacting to lower interest rates, increased money supply and new investor confidence. They are not, however, showing any particular strength in themselves.

But, remember, when you burn off a plot of land to get rid of the brush in the fall, you may find that there's a healthy new crop of cannabis in the spring.



What Does the Chart Show?

All three indexes – the Dow Jones Industrials, the Amex and CW's Composite computer stock index, start even on March 1, 1968. At that time the Dow was at 846 and the Amex at 22.51.

Each division on the chart indicates a 5% change, so a one division increase from the start would bring the CW index to 105, the Dow to 888 and the Amex to 23.64.

So while the three indexes vary considerably in absolute value, the chart represents equally similar percentage changes in the three.

The CW composite index is the average of the five sector indexes that appear in CW weekly, and represents 50 leading – and in some cases faltering – computer stocks.

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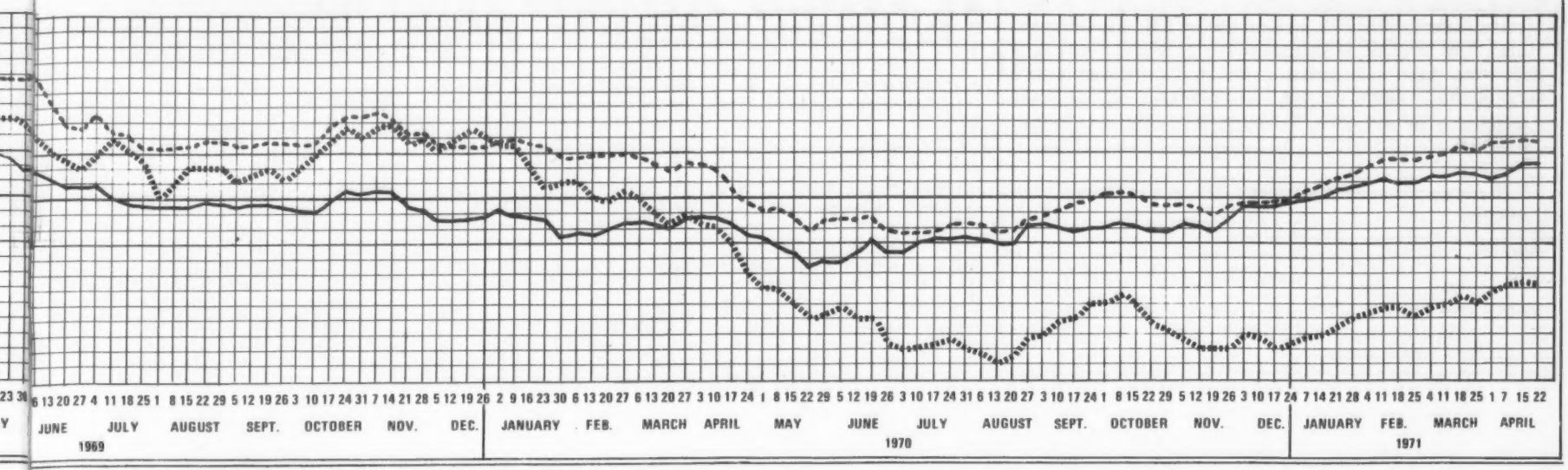
...ERAGE, AND AMERICAN STOCK EXCHANGE INDEX MARCH 1968 THROUGH APRIL 1971



DEC 9-Month Net Drops 20%

MAYNARD, Mass. – Nine months earnings at Digital Equipment Corp. (DEC) have dropped over 20% from the year-earlier figure.

Sales of the minicomputer maker expanded to $104 million from $97 million in 1970, but earnings dropped from $10.4 million to $7.7 million.

On a per share basis, earnings for the nine months fell from $1.10 to 78 cents.

Commenting on the financial results, Kenneth H. Olsen, DEC's president, pointed out that the company is continuing its investment in research and development and its sales and service organization.

More than 300 sales and service engineers have been added over the past year and research and development efforts have resulted in the introduction of a variety of new products, he noted.

DEC's performance was not as poor as had been expected in some quarters.

Third quarter earnings worked out to 23 cents a share, which, while it fell below the 30 cents a share some analysts had been predicting, was also well above the 15 cents a share figure that came out of a recent meeting of DEC officials with securities specialists [CW, April 7].

Acquisitions

Comress, Inc., Rockville, Md., has acquired **Computer and Programming Analysis, Inc.** from Lease Management and Financing Corp. Comress plans to use the New Jersey facility for development, manufacture and maintenance of a line of computer monitoring devices.

Data Computing, Inc. has become the Phoenix Division of **Tally Corp.**, Kent, Washington. Data Computing produces the Typeliner series of communications printers and Cardliner.

Data Products Corp. has acquired **Core Memories, Inc.**, Mountain View, Calif., producer of ferrite cores, stacks and complete memory systems. Data Products designs and manufactures peripheral DP systems.

Varian has obtained a minority interest in **Micrographics Technology Corp.**, Santa Ana, Calif. MTC manufactures microform equipment. Varian has an option to obtain full ownership of MTC.

Corning Glass Works has agreed in principle to acquire **Components, Inc.**, Biddeford, Me., manufacturer of data acquisition processing systems and subsystems for the satellite and space markets. The agreement is subject to approval by the boards of directors of both companies and the stockholders of Components, Inc. Under the proposed plan, Components stockholders would receive 0.0435 shares of Corning common for each share of Components, Inc.

Teleprocessing Computer Corp. of America, Inc. (Telcom) has purchased the business of the Oklahoma City computer center of University Computing Co.'s **Data Link Division**. Telcom will continue to operate the center.

Consultants Associated, Inc., Wakefield, Mass., has become a subsidiary of **Edutronics Systems International, Inc.** Both firms produce and distribute audiovisual programs for DP instruction.

New Registrations

PUBLISHING COMPUTER SERVICE, INC., 1000 16th St., N.W., Washington, D.C. 20036, a company providing a variety of DP services primarily to the publishing industry, has filed to register 200,000 shares of common stock. Proceeds, at $5 per share, are intended for financing the opening of two sales and service offices and for general corporate purposes.

STORAGE TECHNOLOGY CORP., 2270 S. 88th St., Louisville, Colo., a company organized to design, develop, manufacture and market computer peripheral equipment, has filed to register 375,000 shares of common stock. Proceeds, at $13 per share maximum, are intended for use in the development of added features, new models and other products, and for other corporate purposes. The underwriter is C.E. Unterberg, Towbin Co., 61 Broadway, N.Y. 10006.

CONSOLIDATED COMPUTER LIMITED, 48 Yonge St., Toronto 1, Ont., a company primarily engaged in the production of a computer data preparation system, filed to register 600,000 shares of common stock. Proceeds, at $15 per share maximum, intended to repay short term bank indebtedness incurred or to be incurred for working capital purposes, to pay suppliers for equipment and for working capital and other corporate purposes. Shearson, Hammill & Co. Inc., 14 Wall St., New York 10005 is the underwriter.

NCR Revenues Rise, But Earnings Drop

DAYTON, Ohio – Worldwide revenues of National Cash Register for the first quarter of 1971 totaled $344 million compared with $308 million for the year earlier period, an increase of 12%.

Revenues from international subsidiaries and branches rose 27%, while domestic revenues were approximately the same as last year.

Consolidated net income plummeted, though, to $5.3 million, from the $8.6 million reported for the first quarter of 1970. On a per-share fully diluted basis, this amounted to 25 cents compared with 39 cents in the prior year.

Both the revenue and earnings figures for 1970 are restated to include the results of Appleton Coated Paper Co. on a pooling-of-interests basis. Appleton was acquired by NCR last fall.

The company's first-quarter earnings last year were the highest ever achieved by NCR for the period, due to heavy equipment deliveries, and represented a 22% increase over the previous first-quarter record, noted Robert S. Oelman, NCR chairman.

"Domestic shipments for the first quarter of this year continued to reflect the softness of the U.S. economy. This was not unexpected, since shipments tend to follow by several months the receipt of incoming orders."

Domestic incoming orders are now running slightly ahead of last year's pace, Oelman added. Incoming orders from abroad are maintaining the level of a year ago, he said, even though the peak of the UK's decimalization program has been passed.

The NCR chairman said that during the 1971-1972 period, the company will be introducing more major new products than in any comparable period. These include additions to the NCR Century Series computer family, new types of data terminals, a new-generation electronic accounting machine series, and various office products.

EM&M Reverses Trend With Profit

LOS ANGELES – Turning around from a $14 million loss last year, Electronic Memories and Magnetics (EM&M) has reported a profit of $483,000, or four cents a share, for the first quarter.

The first quarter last year, the company made $784,000, or 10 cents a share.

Sales were up slightly to $22.2 million in the 1970 quarter. EM&M also took advantage of a federal tax credit of $574,000, or 11 cents a share, which brought total net income to $1.1 million, 15 cents a share.

Prices are firming in the disk pack market, and EM&M's rate of off-lease returns have fallen, according to EM&M President Trude C. Taylor.

The first quarter reorganization and cost-cutting "coupled with somewhat improved market conditions, will produce both short- and long-term beneficial results," he added.

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Note: The fee for additional registrants from the *same* company is only $75 each when accompanying first registration.

Insurance Experts

DP Security Workshop Speakers Listed

CHICAGO – Faculty members for the June 14 workshop on computer protection and insurance have been announced. They include:

- Gordon M. Paine, assistant secretary, St. Paul Fire & Marine Insurance Co., computer liability insurance including errors and ommissions coverage.
- Rolf H. Jensen and Fred Zeleny, computer fire protection. Jensen is chairman and professor, fire protection engineering department, Illinois Institute of Technology. Zeleny is chief engineer, western regional office, Factory Insurance Assn.
- Warren G. Brockmeier, director, western region, risk management department, Ebasco Services Inc., fire protection and computer risk management.
- Dr. Robert Wiper, industrial psychologist, care and feeding of computer room employees.
- Herbert T. Walworth, manager, special technical services, Kemper Insurance Co.s, protection of computer room employees.

Other faculty members will include managers of major computer facilities who will tell about the ways they protect their computers and software from intrusion and other perils. Additional speakers and features will be announced later.

The registration fee for those who enroll before June 1 is $90, a saving of $15 from the regular workshop fee of $105. This fee includes admission to all sessions, a continental breakfast, two coffee breaks, lunch and a complete workshop notebook.

Companies may enroll additional personnel for only $75 each when the registrations accompany the first registration form before June 1.

Orders and Installations

Philco-Ford Corp. has ordered a $3.5 million Burroughs B6700 system for use in inventory control, payroll, industrial relations, engineering and financial reports.

The Computer Products Group of Sierra Research Corp., Burlington, Mass., received an order for its Model SDA-770 data acquisition system from the Van Brode Milling Co. of Clinton, Mass. The system will operate over leased telephone lines collecting data on time, attendance, and production from five different plants.

The University of Calgary has leased a Control Data 6400 to process research and instructional applications.

A Burroughs B3500, valued at more than $484,000, has been installed at Control Industries, Inc. of Kansas City, Mo.

Xerox Sigma 3, Sigma 5 and Sigma 7 computers have been ordered by TRW Controls Corp. of Houston for use in the company's electrical utilities energy management systems and pipeline control systems.

The Cherry Hill School District, Cherry Hill, N.J., has ordered a Univac 9400 to provide centralized computer services to secondary schools and other locations.

An ECM-75 extended core memory has been ordered from Ampex Corp. by McGill University of Montreal, Canada.

A Datacraft DC 6024/3, valued at more than $150,000, has been installed in the Engineering Computing Laboratory of the University of Wisconsin in Madison.

Burger King Corp. has installed a Burroughs B2500 system, valued at more than $560,000, for general accounting purposes.

NCR Century 200s have been installed by the Kansas State Bank & Trust Co. of Wichita and First Computer Services, a subsidiary of First National Bank of Ruston, La. A Century 100 has been installed at Good Samaritan Medical Center, Zanesville, Ohio.

Sandoz-Wander, Inc., Hanover, N.J., has installed three IBM 2770 data communication systems.

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Computerworld Stock Trading Summary

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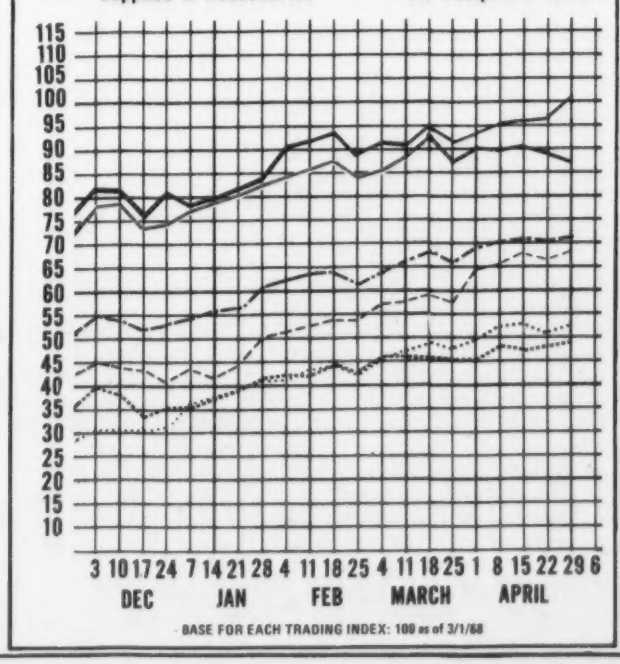
CLOSING PRICES THURSDAY, APRIL 29, 1971

EXCH		1971 RANGE (1)	CLOSE APR 29 1971	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	2- 4	2	- 1/4	-11.1
A	APPLIED DATA RES.	5- 13	9 5/8	- 1/4	-2.5
O	APPLIED LOGIC	1- 3	1 1/2	0	0.0
O	ARIES	1- 2	1 3/8	0	0.0
N	AUTOMATIC DATA PROC	44- 60	59	+1 1/4	+2.1
O	AUTO SCIENCES	5- 8	6 3/8	+ 7/8	+15.9
O	BOOTHE DATA SYS	1- 2	1 3/8	0	0.0
O	BRANDON APPLIED SYS	1- 1	7/8	0	0.0
O	COMPUTER AGE INDUS.	1- 2	5/8	0	0.0
O	COMPUTER ENVIRON	1- 2	1 1/4	0	0.0
O	COMPUTER INDUS.	4- 5	5	0	0.0
O	COMPUTER NETWORK	3- 10	8 3/4	- 1/2	-5.4
O	COMPUTER PROPERTY	6- 11	10 1/2	+1 1/2	+16.6
N	COMPUTER SCIENCES	9- 17	15 7/8	+1 7/8	+13.3
O	COMPUTER TASK GROUP	1- 2	1 1/2	+ 1/4	+20.0
O	COMPUTER USAGE	5- 16	10 1/2	+1 7/8	+21.7
O	COMP AUTOMOT REPORTS	6- 13	12 1/4	- 3/4	-5.7
A	COMPUTING & SOFTWARE	27- 45	42 1/8	+ 1/8	+0.2
O	COMRESS	2- 4	3 1/4	+ 1/8	+4.0
O	COMSHARE	4- 8	7 1/4	- 1/2	-6.4
O	CONSOL. ANAL. CENT.	1- 2	1 5/8	- 1/8	-7.1
O	DATA AUTOMATION	1- 4	2 5/8	- 1/8	-4.5
O	DATA PACKAGING	7- 10	8 3/8	- 1/4	-2.8
O	DATAMATION SERVICE	1- 3	1 1/4	+ 1/8	+11.1
L	DATATAB	4- 10	9 1/2	+ 1/4	+2.7
O	DIGITEK	1- 3	3	+ 7/8	+41.1
O	EDP RESOURCES	7- 16	16 1/4	+2 1/2	+18.1
A	ELECT COMP PROG	3- 7	5 1/8	0	0.0
N	ELECTRONIC DATA SYS.	61- 85	70 1/8	+7 1/8	+11.3
O	INFORMATICS	7- 15	13 3/4	+ 3/4	+5.7
A	ITEL	15- 23	19 1/4	-2 7/8	-12.9
O	KEYDATA CORP	10- 14	11 7/8	- 1/8	-1.0
A	MANAGEMENT DATA	8- 11	9 1/2	+ 1/4	+2.7
O	NATIONAL CSS INC	7- 14	13 1/2	+ 1/4	+1.8
O	NAT COMP ANALYSTS	1- 4	3 1/8	- 1/4	-7.4
O	NAT.COMP. SERV.	2- 3	2	- 1/4	-11.1
N	PLANNING RESEARCH	16- 26	23	+ 1/8	+0.5
O	PROGRAMMING METHODS	18- 29	24 1/2	+2	+8.8
O	PROGRAMMING & SYS	2- 4	2 5/8	- 1/4	-8.6
L	PROGRAMMING SCIENCES	1- 3	5/8	+ 1/8	+25.0
O	SCIENTIFIC RESOURCES	1- 2	7/8	0	0.0
O	SOFTWARE SYSTEMS	1- 2	1 3/8	0	0.0
O	TBS COMPUTER CENTERS	5- 9	6 1/2	-1 1/4	-16.1
O	TOLLEY INTL CORP	3- 8	7 1/2	+ 1/4	+3.4
O	UNITED DATA CENTER	2- 6	4 3/4	0	0.0
N	UNIVERSITY COMPUTING	21- 32	29 3/8	+1 1/2	+5.3
A	URS SYSTEMS	7- 11	7 7/8	0	0.0
O	U.S. TIME SHARING	1- 3	2 1/4	- 3/8	-14.2
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	24- 38	37 1/4	+2 3/8	+6.8
O	ALPHANUMERIC	3- 6	4 1/4	+ 3/8	+9.6
N	AMPEX CORP	17- 25	21 3/8	0	0.0
O	ASTRODATA	1- 2	1 3/4	0	0.0
O	ATLANTIC TECHNOLOGY	3- 6	5 7/8	- 1/4	-4.0
A	BOLT,BERANEK & NEW	6- 8	7 3/4	+1 3/8	+21.5
N	BUNKER-RAMO	10- 17	15 1/2	- 1/4	-1.5
A	CALCOMP	23- 33	30 1/2	+ 5/8	+2.0
O	COGNITRONICS	6- 9	6 1/8	0	0.0
O	COLORADO INSTRUMENTS	4- 8	6	+1 1/4	+26.3
O	COMPUTER COMMUN.	6- 19	14 1/2	+ 3/4	+5.4
A	COMPUTER EQUIPMENT	4- 7	6 3/8	+1 1/8	+21.4
A	COMPUTEST	13- 20	14 1/2	+ 1/4	+1.7
O	CONSOL COMPUTER LTD.	8- 11	11 1/8	+ 1/8	+1.1
A	DATA PRODUCTS CORP	6- 10	8	- 3/8	-4.4
O	DATA TECHNOLOGY	3- 9	8 1/8	+ 7/8	+12.0
O	DIGITRONICS	4- 8	5 1/4	- 3/8	-6.6
N	ELECTRONIC M & M	8- 14	13 5/8	+ 3/4	+5.8
O	FABRI-TEK	2- 3	3 1/4	- 1/8	-3.7
O	FARRINGTON MFG	1- 3	2	- 1/2	-20.0
O	FOTO-MEM INC	2- 6	2 1/4	- 1/2	-18.1
O	INFOREX INC	31- 48	46 1/2	+ 1/4	+0.5
O	INFORMATION DISPLAYS	5- 8	6 3/8	- 1/4	-3.7
O	MANAGEMENT ASSIST	1- 2	1	0	0.0
A	MARSHALL INDUSTRIES	18- 27	23 5/8	-2	-7.8
A	MILGO ELECTRONICS	18- 26	22 1/4	+ 1/2	+2.2
N	MOHAWK DATA SCI	23- 47	45	+4 3/8	+10.7
O	ON LINE SYSTEMS INC	7- 18	15 1/2	-1 1/4	-7.4
O	OPTICAL SCANNING	13- 18	15 3/8	+ 3/4	+5.1
O	PHOTON	7- 12	10	- 1/4	-2.4
O	PHOTO-MAGNETIC SYS.	1- 1	1	+ 1/4	+33.3
A	POTTER INSTRUMENT	17- 25	22 5/8	+ 1/8	+0.5
O	PRECISION INST.	7- 14	10	-1 1/2	-13.0
O	RECOGNITION EQUIP	14- 26	23 3/8	- 7/8	-3.6
O	REDCOR CORP.	5- 9	7 3/4	+ 1/8	+1.6
N	SANDERS ASSOCIATES	13- 22	18 3/4	- 3/8	-1.9
O	SCAN DATA	6- 11	7 5/8	+1 3/8	+22.0
O	TALLY CORP.	11- 16	13	- 7/8	-6.3
N	TELEX	15- 22	20 5/8	+ 1/2	+2.4
O	VIATRON	1- 4	7/8	- 1/8	-12.5
	SUPPLIES & ACCESSORIES				
N	ADAMS-MILLIS CORP	14- 19	15 1/4	- 1/4	-1.6
O	BALTIMORE BUS FORMS	6- 10	9 1/4	0	0.0
A	BARRY WRIGHT	8- 13	10 7/8	+ 3/8	+3.5
A	DATA DOCUMENTS	18- 29	24 1/2	+ 3/4	+3.1
O	DUPLEX PRODUCTS INC	8- 10	9	- 1/8	-1.3
N	ENNIS BUS. FORMS	10- 13	11 5/8	+ 1/2	+4.4
O	GRAHAM MAGNETICS	9- 33	30 3/4	- 3/4	-2.3
O	GRAPHIC CONTROLS	8- 13	13 1/8	+1 1/2	+12.9
N	MEMOREX	54- 78	58 3/4	- 5/8	-1.0
N	3M COMPANY	96-117	115 1/4	- 3/8	-0.3
O	MOORE BUS. FORMS	37- 42	39 3/4	-1 1/4	-3.0
N	NASHUA CORP	29- 45	44 7/8	+ 7/8	+1.9
O	REYNOLDS & REYNOLD	37- 52	47	-3 1/4	-6.4
O	STANDARD REGISTER	19- 23	20 3/4	-1 3/8	-6.2
O	TAB PRODUCTS CO	8- 14	13 1/2	+1 3/4	+14.8
N	UARCO	25- 30	29 1/2	+1 3/4	+6.3
A	WABASH MAGNETICS	8- 10	8 5/8	- 1/4	-2.8
N	WALLACE BUS FORMS	18- 26	23 1/4	-1 1/4	-5.1
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	105-138	137 1/2	+10 3/4	+8.4
N	COLLINS RADIO	14- 20	18 5/8	- 5/8	-3.2
N	CONTROL DATA CORP	48- 76	75 1/2	+3 1/2	+4.8
O	DATA GENERAL CORP	19- 45	44 5/8	+6	+15.5
N	DIGITAL EQUIPMENT	53- 79	77 7/8	+5	+6.8
N	ELECTRONIC ASSOC.	5- 9	7 7/8	- 3/8	-4.5
A	ELECTRONIC ENGINEER.	5- 9	9	+ 5/8	+7.4
N	FOXBORO	25- 42	41 5/8	+2 3/4	+7.0
O	GENERAL AUTOMATION	12- 26	20 1/2	+2 1/4	+12.3
N	GENERAL ELECTRIC	94-124	123 3/4	+3 3/8	+2.8
N	HEWLETT-PACKARD CO	30- 45	40	+ 3/4	+1.9
N	HONEYWELL INC	83-115	109	+9 3/8	+9.4
N	IBM	310-364	362	+10	+2.8
O	INTERDATA INC	6- 11	10 1/2	+ 1/4	+2.4
N	NCR	38- 47	43 5/8	+1	+2.3
N	RCA	26- 39	39 1/4	+2 3/4	+7.5
N	RAYTHEON CO	27- 45	45 1/4	+5 5/8	+14.1
O	SCI. CONTROL CORP.	1- 2	1 1/8	+ 1/8	+12.5
N	SPERRY RAND	25- 38	35 7/8	+ 3/8	+1.0
A	SYSTEMS ENG. LABS	14- 18	14 5/8	- 1/4	-1.6
N	VARIAN ASSOCIATES	13- 18	16 1/8	-1	-5.8
N	VICTOR COMPTOMETER	17- 27	21 5/8	- 1/8	-0.5
N	WANG LABS.	29- 48	47 1/2	+2 1/4	+4.9
N	XEROX CORP	85-110	107 1/8	+4	+3.8
	LEASING COMPANIES				
A	BOOTHE COMPUTER	13- 27	25	- 3/4	-2.9
O	BRESNAHAN COMP.	2- 4	3 1/4	- 1/4	-7.1
O	COMPUTER EXCHANGE	4- 9	5 1/4	+ 3/8	+7.6
A	COMPUTER INVSTRS GRP	8- 13	12	0	0.0
N	DATA PROC. F & G	11- 19	17 1/2	0	0.0
O	DATRONIC RENTAL	2- 4	3	- 1/8	-4.0
A	DEARBORN-STORM	24- 44	40 3/4	- 3/4	-1.8
A	DIEBOLD COMP. LEAS.	5- 12	12 1/4	+2 5/8	+27.2
A	DPA, INC.	4- 8	7 3/8	+ 1/8	+1.7
A	GRANITE MGT	9- 13	10 1/4	-1	-8.8
A	GREYHOUND COMPUTER	7- 11	10 1/4	+1	+10.8
N	LEASCO CORP	16- 23	21 1/2	+1 5/8	+8.1
O	LECTRO MGT INC	2- 4	3 7/8	+ 3/4	+24.0
A	LEVIN-TOWNSEND CMP	5- 9	7 3/4	+ 7/8	+12.7
O	LMC DATA, INC.	1- 1	7/8	- 1/8	-12.5
O	NCC INDUSTRIES	3- 8	6 3/4	+ 1/8	+1.8
O	SYSTEMS CAPITAL	3- 6	3 1/2	+ 1/4	+7.6
N	U.S. LEASING	16- 24	23 1/2	+ 7/8	+3.8

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



BASE FOR EACH TRADING INDEX: 100 as of 3/1/68

Earnings Reports

RAYTHEON
Three Months Ended April 4

	1971	1970
Shr Ernd	$.62	$.58
Revenue	316,069,000	307,146,000
Earnings	8,874,000	8,806,000

Fully diluted per-share earnings were 59 cents in 1971 and 56 cents in 1970.

IBM
Three Months Ended March 31

	1971	1970
Shr Ernd	$2.19	$2.02
Rev	1,870,133,046	1,720,810,543
Earnings	250,807,781	230,261,417

HAZELTINE
Three Months Ended March 31

	1971	1970
Shr Ernd	.....	$.21
Revenue	$8,547,000	15,627,000
Earnings (Loss)	(213,000)	410,000

WALLACE BUSINESS FORMS
Three Months Ended Jan. 31

	a1971	1970
Shr Ernd	$.27	b$.26
Revenue	8,796,000	8,099,000
Earnings	482,000	455,000
6 Mo Shr	.53	b.51
Revenue	16,807,000	15,531,000
Earnings	949,000	895,000

a-Includes operations of Visible Computer Supply Corp. for the 1970 six months. b-Adjusted for two-for-one stock split in November 1970.

LECTRO MANAGEMENT
Year Ended Dec. 31

	1970	1969
Shr Ernd	$.36	$.48
Revenue	1,393,000	988,700
Earnings	153,700	171,700

SYS COMPUTER
Year Ended Dec. 31

	a1970	1969
Revenue	$350,000	$712,014
Earnings (Loss)	(500,000)	32,941

a-Preliminary.

DATA MANAGEMENT
Six Months Ended Feb. 28

	1971	1970
Revenue	$225,929	$198,920
Earnings	41,648	48,317

ATLANTIC TECHNOLOGY
Three Months Ended March 31

	1971	1970
Shr Ernd (Loss)	$.12	($.16)
Revenue	691,898	24,023
Earnings (Loss)	132,672	(178,032)

DATASCAN
Year Ended Dec. 31

	1970	1969
aShr Ernd (Loss)	($.44)	$1.26
Revenue	10,981,828	10,308,207
Spec Chg	b34,805	.....
Earnings (Loss)	(155,620)	437,952

a-Based on income before special charge. b-Attributable to expenses in connection with a public offering not consummated.

DATA SYSTEMS ANALYSTS
Year Ended Dec. 31

	1970	1969
Shr Ernd	$.12	$.11
Revenue	1,897,553	a2,056,211
Earnings	83,341	81,224

a-Restated.

INTERNATIONAL TIMESHARING
Nine Months Ended Feb. 28

	1971	1970
Shr Ernd (Loss)	($.04)	($.35)
Revenue	1,738,658	1,047,790
Earnings (Loss)	(81,758)	(689,554)
3 Mo Shr (Loss)	(.01)	(.06)
Revenue	582,922	443,388
Earnings (Loss)	(27,571)	(123,157)

TAB PRODUCTS
Nine Months Ended Feb. 28

	1971	1970
Shr Ernd	$.50	$.39
Revenue	13,401,000	14,470,000
Earnings	420,000	327,000
3 Mo Shr	.08	.11
Revenue	4,127,000	4,806,000
Earnings	68,000	94,000

TECHNOLOGY INC.
Six Months Ended Dec. 31

	1970	1969
Shr Ernd	$.04	.30
Revenue	7,602,295	6,959,758
Earnings	36,855	277,422

AMERICAN RESEARCH & DEVEL.
Three Months Ended March 31

	1971	1970
Shr Assets	$60.31	$94.34
Assets	370,328,434	579,229,575

BARRY WRIGHT
Three Months Ended March 31

	1971	1970
Shr Ernd	$.05	$.17
Revenue	6,796,353	7,575,210
Earnings	79,297	296,241

COMRESS
Three Months Ended March 31

	1971	1970
Revenue	$1,142,000	$1,360,000
Earnings (Loss)	123,500	(50,000)

But it helped.

Mary Pickett is an associate systems programmer with RCA Computer Systems in Cinnaminson, New Jersey. Not too far from Atlantic City, site of this year's Spring Joint Computer Conference. She joined ACM in 1969, while a student at Purdue. With RCA since last August, she's getting involved in our Delaware Valley Chapter and recently switched from student to regular membership.

She's looking forward to the Spring Joint. "It's a chance to attend good lectures, see the exhibits and renew a lot of friendships," says Mary. "And my ACM membership helps. I save $30 on admission, more than enough to cover my annual dues."

ACM membership is a lot more than conference discounts. It's technical publications, lectures, seminars and special interest groups. A chance to get involved. And the professional pride of belonging to the oldest and most respected association in the computer field.

If you're going to the Spring Joint and don't belong to ACM, join now and save $30 at Atlantic City. Send in the coupon today!

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New York, New York 10036

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